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Tuberculosis Control in New Brunswick*

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NEW BRUNSWICK, with an area of 27,985 square miles, has an estimated population of 435,000, 70 per cent. of which live in rural areas. Approximately one-third of the population are French-speaking. For the purposes of public health administration the Province is divided into five health districts† under the direction of a physician with special training in tuberculosis and holding a Diploma in Public Health. There are no local health departments. This plan was provided in the Public Health Act of 1918 under which the department was organized with the Honourable Wm. F. Roberts, M.D., as the first Minister of Health in the British Empire. At that time the Province was divided into four districts. Each district was divided into sub-health districts corresponding to the counties and each had a board of health of which the district medical health officer was chairman. A modern public health laboratory was provided and an effective system of vital statistics was established. In 1922 a full-time school medical service was inaugurated with six full-time medical inspectors.

In 1909 a commission investigated the possibility of establishing a tuberculosis sanatorium and as a result the Jordan Memorial Sanatorium at River Glade was opened in 1911. Four years later the City and County of Saint John opened a tuberculosis hospital at East Saint John and in 1931 the third institution, the Sanatorium Notre-Dame de Lourdes, was established near Bathurst, thus pro-

**Presented before the Section of Vital Statistics and Epidemiology at the twenty-seventh annual meeting of the Canadian Public Health Association, Ottawa, June, 1937.*
†By recent legislation provision is made for ten districts.

viding more than 400 beds for the care of this disease. The Provincial Government is providing 56 additional beds at River Glade to be available in May, 1938; 20 extra beds are to be provided at the Saint John Tuberculosis Hospital during the present year.

The work of voluntary agencies has been an important factor, particularly the services rendered by the New Brunswick Tuberculosis Association. It is of interest that New Brunswick will soon be the second Province in Canada to be classed as a tuberculosis-free area in respect to dairy cattle under the plan now being carried out by the Department of Agriculture.

In general the death rate from tuberculosis in New Brunswick is higher than in Canada as a whole. The New Brunswick rate in 1936 was 75.3 per 100,000, compared with 61.3 for the Dominion. In 1935 the rates were 78.1 and 60.3, respectively. The rate in Quebec and Nova Scotia is higher than in New Brunswick, approximately the same in British Columbia, and considerably lower in the other provinces, particularly Saskatchewan and Ontario. The lowest rate in New Brunswick, 67.1, was recorded in 1934.

It is not the purpose of this paper to trace the history of the tuberculosis-control program but to outline the present measures for early diagnosis, the provisions for treatment, the finding and examination of contacts, and the education of the public.

FACILITIES FOR EARLY DIAGNOSIS

In 1924 a travelling diagnostic clinic was established, Dr. G. J. Wherrett, now executive secretary of the Canadian Tuberculosis Association, being the first diagnostician. Under the auspices of the Maritime Tuberculosis Educational Committee Dr. Wherrett visited various sections of New Brunswick and also Prince Edward Island. The work of this committee and the visits of Dr. Wherrett had far-reaching effects in tuberculosis control in the Maritime provinces. In 1927 a second diagnostician was appointed for full-time services, the Province being divided into two districts.

In 1934 the field officers of the Department of Health included, in addition to the diagnosticians, four full-time district medical health officers, each in charge of one of the four health districts of the Province, and six full-time medical inspectors of schools. In July of that year an important change was made in the organization. Each health district was placed under the supervision of a medical health officer who had not only a Diploma in Public Health but special training in tuberculosis. The medical health officers became tuberculosis diagnosticians in their respective areas and the medical inspectors of schools became assistant medical health officers. This arrangement permitted the examination of a larger number of patients suspected of having tuberculosis. In 1935 a fifth health district was formed by reducing the size of one of the four original areas and it is expected that in the near future further subdivision of the present districts will be made. As replacements are made on the staff, medical officers are sent to obtain the post-graduate course in public health and,

in addition, receive special training in tuberculosis through arrangements made by the Department.

From the beginning of the diagnostic clinics, every care has been exercised to develop the closest relations with the practising physicians. In turn, they have been very appreciative and co-operative and it is a common occurrence for them to accompany the diagnosticians to see their patients. The service has, of course, been rendered without charge. The visits and the work of the tuberculosis officers have stimulated the practitioners to keep tuberculosis in mind and there has been an added interest in thorough chest examinations, in having x-ray plates taken, and in having sputum examinations and tuberculin tests made.

In the first year of the diagnostic service (1925), 564 examinations were made, of which 243 were found to be tuberculous; while in 1936, 3,487 examinations were performed (2,240 being new patients), with 398 new cases of tuberculosis being discovered. That physicians are considering tuberculosis much more often in a differential diagnosis than they did in the past, is indicated by the fact that in the first two years of the service 31 per cent. and 43.3 per cent. of patients examined were found to be tuberculous in comparison with only 9.8 per cent. and 11.1 per cent. during 1934 and 1935, respectively.

In 1930 an anti-tuberculosis campaign was conducted in Gloucester county. Since that time four other counties have been covered, and one parish of Gloucester county received concentrated attention last year. In each county five or six villages or towns were selected as being central for a large surrounding rural area. Lectures on tuberculosis were given, motion pictures were shown, and literature was distributed at public meetings. With the approval of the physicians of the districts, all persons asking for a physical examination for tuberculosis were accommodated, and those considered suspicious were x-rayed. In five of these surveys 1,809 people were examined, and 171 cases of active tuberculosis were discovered (9.5 per cent.). Thus the results of such surveys are satisfactory as far as finding tuberculosis is concerned, but fifteen years would be required to cover the Province. The method may be used with advantage in areas where the tuberculosis mortality rate is high. In this respect, the French-speaking districts in New Brunswick require special attention, as with 30 per cent. of the population, they have contributed 43 per cent. of the deaths from tuberculosis in the past eight years. There are only 1,598 Indians on reserves in New Brunswick (1931 census) but the death rate from tuberculosis among them in the past eight years has ranged from 187 to 875 per 100,000. In only one year was the rate below 400.

Examination of Students

In 1926 at St. Joseph's College, 76 students were examined, including x-ray, by travelling tuberculosis diagnosticians of the Department of Health. Three cases of active tuberculosis were found. In 1928 the Provincial Normal School and Mount Allison University were visited. Since that time practically every college and university in the Province has been included. Students entering

their first year are given a general physical examination, including x-ray of the chest, by the field staff of the Department of Health. The Normal School students are given lectures on tuberculosis by one of the district medical health officers. Such examinations have been given to 6,571 students and 66 were found to have active tuberculosis. To our knowledge, New Brunswick was the first Province to institute chest x-ray examinations of all first-year college students. The discovery of tuberculosis in the students is important, but it forms only a small part of the value of such surveys. The future school teachers and college graduates will exert a great influence on every community in the Province. The routine examinations stimulate interest among this group and it is hoped and expected that they will spread information about tuberculosis after their graduation.

In addition, several surveys have been made in schools and one industrial and one institutional project were carried out.

The total number of examinations made by the travelling tuberculosis diagnosticians from 1925 to 1936 inclusive was 37,496, with 4,616 new cases of tuberculosis reported.

Diagnostic Difficulties and the Portable X-ray unit

As has been stated, about 70 per cent. of New Brunswick's 435,000 people live in rural areas. Clinics are held in the larger centres but many examinations must be made many miles from headquarters in country districts.

The tuberculin test is used in cities and towns but it is often impractical in remote areas where revisitation in 48 hours would be too time-consuming and expensive. Sometimes the family physicians interpret the test, but, in spite of recognizing the importance of this diagnostic procedure, an x-ray film by a portable unit would often be cheaper.

In most of the towns and rural areas, the number of x-ray films available for indigent patients has been insignificant. Many rural districts have not electric power, but even where it is available there is so much variation of current that the portable x-ray unit cannot be used satisfactorily. A sufficient number of x-ray films is essential to efficient diagnosis and poor families with 10 or 12 members cannot be expected to pay hospital rates of $10.00 or more for x-ray films for each contact. The New Brunswick Department of Health plans to acquire, in the near future, a portable x-ray unit* to be conveyed in a motor truck or trailer with a generator to supply current and with facilities for showing talking pictures.

A bi-weekly clinic is conducted in Saint John by the medical staff of the Saint John Tuberculosis Hospital. This clinic serves about one-seventh of the population of the Province. Last year 1,620 examinations were made.

TREATMENT AND ISOLATION

The treatment of active cases of tuberculosis and the isolation of infectors is carried on in sanatoria or at home.

*This unit is now available for use in the field work.

In the three sanatoria—the Jordan Memorial Sanatorium at River Glade, the Saint John Tuberculosis Hospital at East Saint John, and the Sanatorium Notre-Dame de Lourdes, near Bathurst—the Province has approximately 400 beds available; but if, with 329 deaths in 1936, we estimate that there are between 1,600 and 3,200 active cases of the disease, the bed capacity is insufficient. There are long waiting lists at the sanatoria and many patients must be treated at home. As far as possible, the following are selected for sanatorium care: open cases who cannot be isolated at home, especially if there are children; patients who require surgical treatment such as pneumothorax or thoracoplasty; and active cases without facilities at home.

Such a scheme provides numerous difficulties. For instance, there is a tendency for beds that might be occupied by patients with a good chance of complete recovery to become filled by chronic invalids with far-advanced tuberculosis. A less expensive method for caring for these infectors is one of the greatest needs in tuberculosis work. Suggestions such as boarding them in childless homes, or placing them in municipal homes, seem impractical—the former because sufficient homes cannot be found, and the latter because nursing and medical care are often required. A series of cottages adjacent to a sanatorium might be feasible.

According to the present system, the county (or incorporated town or city) is responsible for the care of indigent patients. In the past it has been customary for some counties to charge back such expenses to the parish, the smallest political unit, as is done in non-tuberculous illnesses. Just how small an amount of property or money a person must have to be "indigent" is problematical, and the use of the term allows a loophole for counties to deny responsibility for sanatorium charges. Although the district medical health officer has the right to send to a sanatorium any tuberculous patient who is a menace to the health of others, yet the county authorities may refuse to pay for his care. This is a matter to be settled between the county and the sanatorium. Unquestionably the district medical health officers should have complete control over the selection of cases for sanatorium care, although it can hardly be denied that county councillors should have control over their expenditures. Thus the system is faulty.

The expenses for sanatorium care are uneven in distribution and have become unbearably high in some counties, depending on the morbidity rate. In the past four years the average death rate in Gloucester has been 124 per 100,000 (141 in 1936) and in Victoria, 35 per 100,000 (30 in 1936). Deaths in Gloucester in 1936 were 64, with an estimated 320 active cases as a minimum. Deaths in Victoria were 5, with an estimated 25 active cases as a minimum. Moreover, in Gloucester in the past four years Saumerez parish (population 5,125) has had an average death rate of 273 per 100,000. Fifty-six deaths in four years is an average of 14 per year, and an estimate gives the number of active cases as between 70 and 140 for this parish. The homes in this area are small, the families are large, and the people financially poor.

It is a grim but interesting coincidence that this area with the maximum

tuberculosis mortality rate was part of the district where in the 19th century leprosy was prevalent among the inhabitants, and that Tracadie in this parish is the site of the Lazaretto where the efficiency of segregation in stamping out leprosy was demonstrated. Nevertheless, as Dr. Wm. Warwick has stated: "It seems evident that the other important factor was the intensive search for possible cases among the population in the area, carried on by Dr. Smith and his successors, a policy which to-day is considered so essential in the control of tuberculosis." Had the lungs of tuberculous individuals been visible to the naked eyes of the public, they would have been considered as "loathesome" as leprosy; public opinion would have demanded isolation; and tuberculosis would probably be as rare as leprosy.

On the other side of the picture is the Parish of Stulholm in Kings County with 2 deaths in four years from tuberculosis, an average rate of 21.7 per 100,000 (population 2,300). Three to five active cases would be a reasonable estimate.

Neither parishes nor counties should consider tuberculosis as a local problem. Infectors and infected travel across parish, county, and provincial boundaries. New Brunswick must initiate some scheme to equalize expenditures for tuberculosis to lighten the burden on over-pressed municipalities. Plans are under consideration for such a change. On May 1st of this year the Provincial Government increased its subsidy from 75 cents to one dollar per patient-day, as a temporary measure to help the counties. A pool system such as Saskatchewan's is not feasible without considerable preparatory changes.

In regard to home treatment, the only point of special interest is that there are physicians in all sections of the Province who are capable of giving pneumothorax refills. This permits the earlier discharge from sanatoria of patients getting such collapse therapy. The city of Saint John has two full-time nurses for tuberculosis follow-up work and Moncton has one. Several towns have public health nurses who spend part of their time in such duties.

In New Brunswick we feel that we have accomplished much; we recognize serious defects in our system of tuberculosis control which we are trying to correct; and we look forward to the future with confidence.

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The Simplicity of the Treatment of Syphilis*

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Ottawa, Ontario

TREATMENT of syphilis may be likened to a race—a race between a drug and a germ. The start is a chancre; the course, the tissues of the afflicted; and the goal of the germ, safe haven in the inaccessible remotenesses of the patient's heart, brain, or bone; where if it win it may claim an aneurysm as its prize or direct that the vanquished be cared for in an insane asylum. Uncontested, or half-heartedly opposed, syphilis wins by default—your default.

We all know that these major catastrophes do not occur always or even often, but it is true that observable invasion of the cardiovascular system takes place in one-third of all mistreated cases; and it is a matter of record that ten per cent. of the inmates of our mental hospitals are so confined because of syphilis involving the nervous system. Moreover, leaving aside these spectacular sequelae, the badly-treated luetic almost always suffers serious injury. He is more vulnerable to casual injury, less able to bear his load. A kick on the shin may produce a specific ulcer; a head injury may be followed by paresis.

The Importance of Early Diagnosis

In my clumsy comparison I have spoken of the chancre as the starting point in the syphilis race. If you wish the drug to be a successful contestant, it must be entered as a contestant as soon as possible. The few brief days when the initial lesion is first visible are of supreme and critical importance; and medical officers of health, above all others, should realize the urgency. Your responsibility is double. As medical health officers you are dealing with the most dangerous infection known to mankind, which you may make innocuous in a few short hours. As physicians you have the opportunity of saving your patient from a lifetime of fear and uncertainty. You can do both. In this race for the patient's safety the odds are twenty to one in your favour, if you do not waste that most important factor—time. Even at best the spirochaete does not start at scratch, for, by the time the penile lesion is recognizable, enlargement of nearby lymphatics always shows that the organism is well away. Yet for a brief period the medical officer of health deals with a contagion which he can quickly control, and as a physician he sees a patient whose disease he can cure.

Of course, a diagnosis must be made. It is easy, but not a matter of eyesight. A chancre may look like almost anything; you cannot always be sure of your diagnosis. The certain, simple way is to take some of the serous fluid from the suspicious lesion for a dark-field examination. The requisites are: a

**Presented at the twenty-third annual meeting of the Ontario Health Officers Association, Ottawa, June, 1937.*

sense of duty, a pair of rubber gloves, and the convenient little outfit for forwarding the specimens to the central or a branch laboratory of the Department of Health, Ontario. The outfit consists of a small glass tube containing three capillary tubes intended for withdrawing and holding the chancre serum. After the chancre fluid enters these tubes by capillary attraction, they are sealed by pressing each end into a mixture of 50 per cent. bees-wax and vaseline, which is supplied in a vial. A peripheral blood specimen is submitted in a glass tube which is provided. Within twenty-four hours you will have a report by telegram. The Department of Health of Ontario gives to all its physicians this essential aid.

Speaking in London, England, last year on the control of syphilis, Dr. Thomas Stokes of Philadelphia was pessimistic because in the United States dark-field examination, the prime essential of efficient treatment, was generally unavailable. In this province no physician is properly equipped for the practice of his profession who does not utilize the simple, convenient dark-field outfit of the Department of Health of Ontario. Legal compulsion has made us afraid to neglect the instillation of silver nitrate into the eyes of the new-born, yet the omission of dark-field examination is a malpractice which may bring eye trouble to the children of the neglected patient forty years hence. You must forgive my emphasis on this matter, but the discovery of such a lesion is a medical emergency of the greatest importance—the critical time in the treatment of syphilis.

Proper treatment is simple. The first drug, of course, must be one of the arsenicals. There are different preparations of arsenic with slightly different values. In your selection you will be well advised to follow the suggestions of the Department of Health of Ontario. Three doses should be given during the first week. After the second dose the patient has probably ceased to be infectious. Thereafter, only one treatment a week is necessary. The plan recommended for use in the treatment clinics that are directed by the Division of Preventable Diseases of the Ontario Department is very satisfactory. Eight weekly injections of arsenic are followed by eight injections of bismuth and in turn by eight injections of mercury. This rotation of treatment is followed continuously for two years. Wassermann and other blood tests may be made from time to time but the findings must not influence or disturb the continuity of the treatment. Rest periods are dangerous truces of which the enemy may take disastrous advantage. At the end of the first and second years it is desirable to have the cerebro-spinal fluid examined. No patient should be discharged without a careful study of the cerebro-spinal fluid.

TECHNIQUE OF ADMINISTRATION

It is well to remember that in any given case you are not treating the disease as a theoretical entity. It is not syphilis in general; it is syphilis in John Jones, Mrs. Jones, or the baby, all of whose physical peculiarities must be taken into account. You must not interfere with general health. If arsenic disagrees, as

it rarely does, there is still left bismuth, an effective drug, somewhat slow in action but safe.

The physician should watch the patient's conjunctivae. At the faintest hint of icterus the arsenic should be discontinued at once. A blood count should be made immediately on any patient who becomes pale. Any irritation or redness of the skin in those receiving arsenic is a danger signal. Arsenical dermatitis is very rare but is also very serious, disabling the patient for months. In our clinics all skin disturbances which are suggestive of arsenical dermatitis are treated by the withdrawing of a small quantity of the patient's blood and injecting it intramuscularly. In our experience it has proved a most successful treatment of this condition.

In making intravenous injections it is best to use a small gauge needle. A small needle is less painful and assures a slow injection of the treatment solution. We should remember that we are the descendants of those old blood-letters whose familiarity with the venous arrangement in the antecubital area would put us to shame; with a little practice one should have no difficulty in entering the veins of any patient.

Intramuscular injections should be made into the muscle. If injected into the superficial layers of fat, bismuth is an inert but painful foreign body. As to the area of choice, I prefer the external surface of the thigh between the crest of the ilium and the great trochanter. It is more satisfactory in my experience than the upper outer-third of the buttock and has the advantage of being little used in body movements; and it is modestly accessible in women patients. Moreover, by using the dorsum of the ilium as a gauge of the depth one can always be sure that the injection is made intramuscularly.

This is the proper treatment of syphilis when it is diagnosed early and the treatment commenced immediately. Such cases are almost invariably cured. The promptness with which the treatment is commenced and the faithful continuance of the treatment for two years are the two essential factors in its success. In such a course of treatment a patient receives approximately thirty-two injections of arsenical solutions and an equal number both of bismuth and mercury. It is hard, of course, to persuade a patient as to the necessity of this extended treatment. The cost must never be an obstacle in its continuance. If the physician is conscious of the urgency of the treatment, he will be willing to do everything possible to convince the patient of the necessity for continuing the treatment and will assist him in every way. The provision of clinics has been a great factor in meeting the need in the larger centres. It is probable that the increasing amount of information given in our newspapers and magazines concerning syphilis and its treatment will result in patients more willingly continuing their treatment.

In my opinion it is wise to take immediate steps to prevent the transmission of the disease when the chancre is first diagnosed and before the first arsenical treatment has been given. Private patients are usually co-operative and will accept the advice of going to bed. Transients, vagrants and others should be

sent to hospital and on the authority of the medical officer of health their hospitalization may be enforced, even though the hospital may not desire to receive them.

TREATMENT OF SYPHILIS NOT SEEN IN THE PRIMARY STAGE

Unfortunately the great majority of cases of syphilis are not seen in the chancre stage. The golden opportunity of the dark-field is missed. It is probable that cure can never be confidently expected when treatment is begun six months after infection. By this time the body has been generally infected by the spirochaete. It is the stage where the diagnosis is made from the findings of the Wassermann and other blood tests. The course of the disease is unbroken and presents an infinite variety of manifestations. Dr. Thomas Stokes, to whom reference was made previously, further laments that in many centres facilities for the conduct of these essential blood tests are limited and physicians often fail to have these tests made and so fail to make a diagnosis. It is true that syphilis in this stage is not quite of the same importance to public health as in the primary stage. It is, however, a constant concern to the patient.

Briefly, proper treatment may be expected to do two things. Firstly, it will improve the general health and the appearance of the patient. Women, of course, are deeply grateful for any help to the complexion. The patient may feel better and this improvement in health is often a deciding factor in favour of continuing the treatment. It may be the sole tangible fruit of your toil. Secondly, treatment affords a large measure of protection from the destructive effects of the infection on the cardiovascular and nervous systems. In from five to ten years after infection symptoms of the impairment of the cardiovascular system may be evident. Changes in the aorta, in the heart muscle, and in the vessels of the central nervous system are of relatively frequent occurrence. True, the majority of syphilitic patients do not suffer such involvement. But who can tell, in any given case, that the course will be more fortunate? The only safe and sane procedure is to assume that calamity threatens all and to do our duty in seeing that the patient receives adequate treatment.

We are dealing with lesions whose extent and position are unknown. In certain locations, the aortic wall for instance, too rapid killing of the causative agent might find nature unable to repair with sufficient quickness the weakened area. Hence it is considered advisable in the treatment of chronic syphilis to begin with the slower-acting bismuth salts. Throughout the course of treatment arsenicals assume a less important place, though their cautious use is advisable. The chief concern is the saving of the patient from a chronic incurable infection. The general well-being of the patient is the most reliable guide in the treatment. Blood tests are often fallacious, particularly as negative tests may be obtained. The treatment should be commenced with a course of bismuth and fewer and smaller doses of arsenic should be used than are recommended in the treatment of primary syphilis. If in two or three years the Wassermann test becomes negative and the patient is in good condition a rest may be permitted, during

which time mercury in the form of pills may be administered. Examination of the spinal fluid is a necessary part of the routine of treatment. It is specifically indicated if the blood Wassermann has again become positive, since this reversal is always suggestive of nervous involvement.

TREATMENT OF SYPHILIS INVOLVING THE NERVOUS SYSTEM

The last assault of syphilis is usually on the nervous system. Fortunately neuro-syphilis is not very common even in poorly treated cases but when such cases occur, as end results of the infection, they are the major catastrophe. Any part of the nervous system may be attacked. Indeed, recent clinical experience leads to the belief that the process is active, often in more than one region. Sharp lines of distinction between paretics and tabetics become blurred into a composite picture of disseminated nervous involvement. Whatever the evidence of nervous damage may be, there is still another hopeful line of treatment in reserve. The induction of fever by inoculating the patient with malarial parasites as contained in the blood of a patient suffering from malarial infection is a simple procedure. It has been shown to give the otherwise doomed patient a 50 per cent. chance of recovery. And here again the element of time becomes most important. Such treatment must be given when the earliest signs of nervous disturbance become evident, in the stage when the reaction of the tissues to the spirochaete is one of irritation and exudate, and before the dead cells of the part have been replaced by inert and permanent scar-tissue. During the past three years our clinics in Ottawa, with facilities no greater than can be found in even the smallest hospital, have carried out this treatment with excellent results. Malarial blood is obtained from one of the mental hospitals where this treatment is being used. Five cc. are injected into the vein. In a few days chills typical of tertian malaria appear, followed by a fever sometimes higher than 107° F. Depending on the condition of the patient, from six to twelve exacerbations are permitted. The administration of a small quantity of quinine will quickly terminate the malaria. In our practice, we save time by giving a second inoculation of malarial blood twenty-four hours after the first. Thus we inoculate the patient with two sets of tertian organisms, obtaining a daily chill and fever. We have found this treatment simple and safe. No special care is necessary and the only contra-indications are serious organic lesions or poor general health. Of the sixty patients with definite nervous involvement so treated, twenty are back at work or are looking for jobs. The saving to the taxpayer is considerable. There is no hazard to the community in the induction of malarial fever as it is impossible for the disease to be transmitted in this climate.

SYPHILIS IN WOMEN

Syphilis in women has peculiar characteristics which demand separate consideration. Dr. Thomas Stokes considers that, aside from the difficulty of obtaining dark-field examination (except in the Province of Ontario) and the too-long delayed information of blood tests, the disease as it occurs in women presents the major problem in the control of syphilis in the community. In every

stage the disease in women is likely to be hidden. The first sore is likely to be found high in the vaginal vault and so changed by the nature of its environment that casual inspection of the mucosa would not arouse suspicion. In the primary stage of the disease, a woman is unwittingly and even innocently a dangerous carrier. Throughout the course of her infection, warning signs and symptoms are less likely to occur, and involvement of important tissues is much less frequent. The disease is milder than it is in men. Further, women hide their infection well and our traditional gallantry has a tendency to lull any suspicion of syphilitic infection. The danger lies in the fact that if she be syphilitic there is the grave possibility of the transmission of the disease to the foetus. In every pregnacy the possibility of syphilis should be considered. A simple blood test leaves your conscience clear. Serological evidence of the disease during gestation makes even a more insistent demand for treatment than does the fresh chancre. In such instances you have under observation an infectious person exposing to most intimate contact another individual, the foetus. Also you have what, in the case of syphilis, is the only opportunity for perfect prophylaxis. Foetal infection is assumed to take place in the fourth or fifth month. It can be prevented absolutely by proper treatment begun at this time and carried through regularly and continuously till confinement. Pregnant women tolerate the arsenicals well. They should receive at least twelve doses, the rest of the period being given to the use of bismuth. Neglect at this time is even more criminal than is inactivity in the presence of a primary infection, and so far as the helpless foetus is concerned there is an opportunity of actually preventing the infection. The same procedure should be adopted in every succeeding pregnacy. The dictum of one famous syphilologist is: "Never tell a woman she is cured."

CONGENITAL SYPHILIS

Congenital syphilis gives other evidence of the infinite variety of this disease. Perhaps its most startling characteristic is its long years of latency. That a foetus may be infected five months before birth, that the child may live through infancy with no outward sign, and then that the adult may develop interstitial keratitis in his twentieth year is indeed a startling example of the vindictive tenacity of the spirochaeta pallidum. Congenital syphilis to-day seems to have changed from the type described in our text-books. It is not spectacular. Snuffles and rashes are rare. Disturbances of spleen and liver or classical dental malformations are seldom seen. Interstitial keratitis is the most constant sign. Ofter the child has a strange look of weariness about him—as if he were worrying about the future.

For the diagnosis of congenital syphilis we must depend on serological tests of the blood. A positive Wassermann test of a sample of blood from the cord is merely a warning that the mother is infected; by no means does it imply that the infant has been. The infant of a sero-positive mother should always have its blood examined. It may be obtained from either the anterior fontanelle or the external or internal jugular veins. Concerning the blood findings of the infant

itself there is considerable doubt in their interpretation. In some clinics, by taking frequent blood tests it has been observed that within a few months and without treatment a gradual disappearance of positive reaction has occurred. A positive test may indicate a real infection which may not give physical evidence of its presence for many years. The only safe plan is to assume that every infant four weeks old who shows a positive Wassermann test has syphilis and should be treated. If this assumption be correct and such treatment is begun immediately, the disease in this form is the most easily cured. I know that my own experience differs from others but I have good reason for confidently expecting that a negative blood test will be obtained after nine months' treatment. The treatment is simple. Invariably it should begin with injections of bismuth. To use such a rapid spirochaeticide as arsenic is to run grave risk of a fatal Herxheimer reaction. Since access to veins is usually difficult, an arsenical preparation suitable for intramuscular use, such as sulpharsphenamine, may be used, but not until at least eight bismuth injections have been given. Indeed, bismuth alone will give very good results. Cure is almost a certainty as evidenced by negative blood tests. In ten years' experience with a group of congenital syphilitics so treated I have not observed one instance of the tests becoming positive again. Here again early diagnosis and immediate treatment are of paramount importance.

In sharp contrast to the success obtained when proper treatment is begun during the first few weeks of life, is the almost certain failure to obtain a negative test in children who have been neglected for a year or more, regardless of the amount of treatment. Even malaria seems to have no effect on the flocculation reactions. Yet, for long years, we must be constantly aware of the threat of interstitial keratitis. When it does occur it should be dealt with as an acute manifestation of generalized syphilis. Prompt and adequate therapy is almost certain to produce a cure without visual defect. It must never be considered an eye disease.

SUMMARY

The treatment of syphilis is considered from the standpoint of its simplicity. No practitioner in Ontario, where the Provincial Department of Health provides every possible assistance, can shirk responsibility in this matter. A sense of duty is the prime requisite. Technical difficulties in treatment are of minor importance and should not be an excuse for non-treatment.

The use of the malarial-fever treatment in chronic syphilis, where the disease appears to be resistant to chemical treatment, is urged, particularly if there is the slighest suggestion of the involvement of the nervous system.

The prevention of congenital syphilis is discussed.

International Relationships of the Department of Pensions and National Health

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NATIONS have long appreciated that many public health problems are international in character and from time to time have attempted organization for pooling experiences and co-operating in measures designed for the prevention and control of disease.

The first attempt in modern times to secure uniformity in such matters was made at Paris in 1851. A Convention was signed by the participating countries, which embodied those precautions against the international dispersion of infectious disease which were at that time considered appropriate. The information which follows regarding the gradual development and evolution of these early efforts has been obtained from the reports of Dr. Frederick Montizambert and Dr. John A. Amyot. Dr. Montizambert was responsible for the development of maritime quarantine measures in Canada and was Director-General of Public Health until the establishment of the Department of Health in 1920, when Dr. Amyot was appointed its first Deputy Minister.

The idea of establishing a central office for the more efficient collection and distribution of information was first discussed at the International Sanitary Conference in Vienna in 1874. The collaborating countries discussed these proposals further at Washington in 1881, at Rome in 1885, at Paris in 1903 and at Rome in 1907. The first International Sanitary Convention was ratified by twenty-three signatory countries at the meeting in Paris on December 3, 1903. Based on Article 181 of this Convention, the meeting at Rome on December 9, 1907, established the International Office and signed the Second International Sanitary Convention. The Third Convention was signed by forty-two countries in 1912, at Paris, as an amendment to that of 1903. Adherence by Canada to the Convention of 1903 was refused by Order-in-Council of July 23, 1904, and similarly refused to the Convention of 1912 by Order-in-Council of July 4, 1912, on the grounds that these Conventions did not meet Canadian conditions.

The establishment of the International Office in 1907 first took the form of a committee of representatives of the thirteen countries concerned, namely, Great Britain, Belgium, Brazil, Spain, the United States, France, Holland, Italy, Portugal, Roumania, Russia, Switzerland and Egypt.

"The arrangement which was concluded for a period of seven years definitely authorized the new office, provided for its control by an international committee, outlined its duties,

and apportioned the expense of maintenance among the interested countries. The true object of the Office is, to quote the words of the statutes of the constitution, 'to collect and bring to the knowledge of the participating states the facts and documents of a general character which relate to public health, and especially as regards infectious diseases—notably cholera, plague and yellow fever, as well as the measures taken to combat these diseases'."

Thus the International Office of Public Health was established at Paris, and commenced issuing a monthly bulletin in 1910. In this are published the collected information regarding the prevalence of disease, agreements between countries concerning health matters, and information regarding their domestic laws on sanitation and disease. Special articles of wide interest, together with abstracts of current public health literature, are included.

Canada acceded to this "Agreement of Rome" of 1907, during the fiscal year 1909-10, which was about one year after it actually became operative. Canada's annual contribution was set at 3,125 francs, and, subject to changes due to variations in exchange and the valuation of the franc, this amount has been paid ever since.

The final and present International Sanitary Convention was promulgated at Paris in 1926, Dr. John A. Amyot being present. It was signed by sixty-seven countries. I cannot do better than quote from his report:

"In order to govern, with least interference possible with shipping and transportation, effective procedure based on the scientific knowledge of the time for the prevention of the entrance and transportation of the great epidemic diseases, cholera, plague, typhus, yellow fever, smallpox and such others as might become widely epidemic, Conventions have been entered into by a gradually increasing number of the nations of the world. Because of the restricted application of the Conventions of 1903 and 1912, Canada did not sign them, though she governed her procedure in quarantine very closely to the principles laid down in both Conventions. Though not adhering to the Conventions, Canada deemed it expedient that she should take part in the deliberations and proceedings of the *Office International d'Hygiène*—seated in Paris—and has contributed annually on an agreed grading to the expenses of the *Office* and has from time to time sent or named delegates to the semi-annual conferences of that body.

"On the invitation of the French Government, transmitted to Great Britain, Canada by Order-in-Council sent Dr. J. A. Amyot, C.M.G., Deputy Minister of Health, with full powers as plenipotentiary, and who, with the consent of Canada, was given complimentary-completing plenipotentiary powers by the King.

"The Canadian Delegate signed the Convention adopted by the Conference on the 21st June, 1926, making reservation in case of Article 12.

"Article 12 is as follows: 'The Government of a country in which an infected area is situated shall inform other Governments and the *Office International d'Hygiène Publique* in the manner specified in Article 4, when the danger of infection from that area has ceased, and when all the preventive measures have been taken. On the receipt of this information the measures prescribed in Chapter 2 shall no longer be applicable to arrivals from the area in question, except in exceptional circumstances which will require to be justified.'

"The reservation is as follows:

'Canada—The Delegate of Canada reserves for his Government the right to decide whether, from the point of view of measures to be applied, a foreign area shall be considered as infected, and to determine the measures which should be applied in special circumstances to arrivals in Canadian ports. Subject to this reservation, the Delegate of Canada declares

that his Government is ready to take into consideration the obligations of Article 12 of the Convention and the official information it may receive on the subject of the existence of disease in foreign countries.'

"Canada has, through its Department of Health, all the facilities for giving the information required and for carrying out the procedures outlined in the Convention of 1926."

Venereal Disease Control

Associated with the International Office, the "International Agreement for the Provision of Facilities to Merchant Seamen for the Treatment of Venereal Disease" was signed at Brussels, December 1, 1924, Canada signing on August 21, 1925. Under this agreement the signatories undertake to establish and to maintain in each of their principal sea and river ports, services, inclusive of medical attention and supplies and hospital care, free of charge. Under this agreement a list of ports is issued, setting forth the addresses and hours for treatment of such centres or clinics. This includes Canadian ports on the Great Lakes.

An outline of standard methods of treatment, as suited to the employment life of the sailor, has been distributed to the larger centres where sick mariners are treated. Personal record cards, on an international model, are available to those seamen desiring them.

Anti-plague Measures

Under Article 28 of the Convention of 1926, all vessels engaged in international commerce are required to be inspected for rat infestation every six months and, in certain circumstances, oftener; and, if necessary, fumigated for the destruction of vermin. This is to assist in preventing the spread of plague. A list is issued and kept up-to-date, of all ports equipped to carry out these duties. Certificates are accepted only from these ports. Canada reports yearly, giving a summary of its activities during the past year, together with a brief review of the sanitary condition of our ports. Much valuable information has been received regarding the inspection of vessels, rat-proofing, and related questions. A graphic exhibit of models of vessels illustrating rat-proofing was received on loan from the United States Public Health Service, and exhibited to Canadian shipping firms. Fumigation of loaded vessels from infected ports has been given much attention and the procedure recommended follows closely that already in use by our service.

Maritime Quarantine

Under Articles 56 and 57 of the Convention, the United States and Canada on January 1, 1930, concluded an agreement for reciprocal quarantine inspection for ports on Puget Sound and the Gulf of Georgia in the west, and the St. Lawrence River and the Great Lakes in the east.

The question of Bills of Health has been given careful consideration in the attempt to lessen the burden on shipping. A Bill of Health is a document which a vessel secures from each port of call, setting forth the health conditions for that

port. With a more rapid receipt of reliable information, these documents have not their former value. Information as to the prevalence of disease in the districts and ports from which incoming traffic arrives is vital to a quarantine service. Our sources of information are the bulletins of the *Office International*, the League of Nations, the Singapore Bureau of the League, the United States Public Health Service, and the British Government at London. This last is a weekly report especially designed for quarantine service purposes and is based on cabled reports from British Consuls all over the world. Special reports come by cable, when advisable, from Canadian Trade Commissioners. On the west coast we have had cable advice from Singapore, notifying disease on individual vessels, that has been very valuable. We have ceased insisting on the British Consular visae on these documents and have retained the Bill of Health itself only from such ports and at such times as may be designated by the Department.

After several years' discussion, a new revised "International Code of Signals" was approved in 1931, to become effective January 1, 1934. The appropriate sections dealing with quarantine and health have been distributed to our Quarantine Officers. A telegraphic address has been notified to the International Office, for our quarantine stations. We accept messages sent in the approved form, but do not insist on their being so sent, as our own practice is simpler and meets our needs.

Aerial Navigation

A Convention for the Regulation of Aerial Navigation came into effect August 1, 1935. It applies the principles of the International Sanitary Convention to air travel. Although this is of the utmost importance to many countries, this Department decided that the time had not come to recommend the adherence of Canada. Our air traffic is in a very early stage of organization. At present our international air travel is with the northern United States, so that special regulations do not seem necessary. Our need has been met by a simple amendment to our Quarantine Regulations, whereby these are made applicable to traffic by air.

Health Organisation of the League of Nations

Under Part II of the Treaty of Versailles, in the Covenant of the League of Nations it was provided that member States would endeavour to take steps in matters of international concern in the prevention and control of disease. At the second session in February, 1920, the Council agreed that an assembly of public health experts from various countries should be convened and, as a result, a temporary Epidemiological Commission was established with the co-operation of the *Office International*. In 1923 the Health Organisation was established and, subject to changes effective in 1937, now consists of a Health Committee and a General Advisory Health Council. The Health Committee consists of twelve members, one the President of the Permanent Committee of the *Office International d'Hygiène Publique*, and the remainder appointed for three years

by the Council of the League of Nations. The General Advisory Committee consists of the Permanent Committee of the *Office International.*

The Health Organisation has concerned itself with public health problems of international concern but, on the request of individual governments, enquiries by experts into special public health problems have frequently been undertaken. Commissions and committees have been appointed to study such subjects as biological standardization, malaria, opium control, nutrition, housing, leprosy and physical fitness. Mention is made in this presentation of only three of the important commissions.

The Commission on Biological Standardization was one of the first commissions appointed. Standards have been established for diphtheria, tetanus, gas gangrene and staphylococcus antitoxins; and for anti-dysentery serum (Shiga), anti-pneumococcus sera (types I and II), and old tuberculin, as well as for Insulin, pituitary extract (posterior lobe) and certain other hormone products. Standards have been established also for vitamins A, B, C and D and for other therapeutic agents such as digitalis strophanthus, salvarsan, neosalvarsan and sulpharsphenamine. In 1935 appropriate authorities were appointed in each country to take charge of the application of the standards. In Canada the Laboratory of Hygiene of this Department assumed these responsibilities, using the standards in the enforcement of the requirements of the Food and Drugs Act. In connection with the supplying of these standards, it is of interest that the Insulin Committee of the University of Toronto and the Connaught Laboratories supplied Insulin crystals for the present international Insulin standard, and the distribution of the standard for use in North and South America is made by the Insulin Committee, University of Toronto. Other standards are received by the Department of Pensions and National Health from the National Institute of Medical Research, London; the National Institute of Health, Washington; and the State Serum Institute, Copenhagen.

In 1935 the Mixed Committee on Nutrition of the League of Nations was appointed, with representatives of the International Labour Organisation and the International Institute of Agriculture. It was recommended that national committees be established. Such a committee has been appointed in Canada and will work in close co-operation with the committee of the League of Nations.

This Department is also vitally interested in the application of the Narcotic Conventions of 1912, 1925 and 1931. Since 1920 it has maintained a special division to implement the provisions of these Conventions and to control narcotic drug addiction in Canada, as under the Opium and Narcotic Drug Act. It sends its own representative, Col. C. H. L. Sharman, Chief of the Narcotic Division, to the meetings at Geneva.

Canada has representation on the Health Committee of the League in Professor J. G. FitzGerald of the University of Toronto, who was appointed by the Committee as one of its expert advisers. As Dr. FitzGerald is also an adviser to the Dominion Council of Health at its semi-annual meetings held in Ottawa, an intimate liaison exists with the League Committee.

For several years the Department has also been directly represented at the semi-annual meetings of the *Office International* by Dr. H. B. Jeffs, Chief Medical Officer in the Overseas Immigration Medical Service. At these meetings, methods in the control of communicable diseases, including quarantine and preventive inoculations, as well as such subjects as the pasteurization of milk, are discussed. Pertinent data relating to Canadian experience are forwarded by this Branch to Dr. Jeffs for presentation. The findings of the meetings and the documents presented are published in the monthly bulletin of the *Office International.*

SUMMARY

The development of international public health agencies is outlined briefly, including the *Office International d'Hygiène Publique* and the present International Sanitary Convention of Paris in 1926, together with the International Agreement of Brussels (1924) relating to the provision of facilities to merchant seamen for venereal disease and the anti-plague measures of 1926. The work of the Health Organisation of the League of Nations, particularly as relating to biological standardization, control of opium and narcotics, and nutrition, is also presented. International agreements between Canada and the United States relating to quarantine, as well as regulations relating to aerial navigation and certain matters relating to maritime quarantine, are discussed.

Records in Public Health Nursing*

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"WITHIN the past decade or two, local public health horizons have broadened, by degrees, until at best each health agency within a community pools its thinking with all the others in working out health programs that will most effectively raise the level of the community health without gaps and without overlapping. And more recently there have been increasing reasons for enlarging our point of view to include the entire state, or at times the whole country."†

This quotation expresses so well the aims of the health movement of which public health nursing is a part that I should like you to keep it in mind when considering this phase of the work of the public health nurse, namely, the keeping of records. Too often record-keeping is not considered in its relation to the whole, but rather as a difficult and uninteresting adjunct to the work which must be performed, and I do not know of any of the nurse's duties that is as often done casually and with so little sense of responsibility. The interest of the nurse is more likely to be centered in the doing of her work rather than in the recording of it. Walker and Randolph, in "Recording of Local Health Work", state: "It is a tradition with both physicians and nurses that they consider the individual service rendered far more important than the record of it. This can only be true when the service is of an emergency nature and when neither a plan for continued personal care nor the protection of the community depends upon it. In practically all public health services the future program, whether it applies to the individual or the community, depends to so great an extent upon the conditions found at the time of the visit, that the recording of what was found is of equal value with the service itself. Since the value of a record of events cannot be determined at the time of the service, the only safe practice is to make complete records of all services habitual."

Neither in public health in general nor in public health nursing in particular have we reached the place where our methods of work are considered final. Public health nursing has not passed out of the experimental stage of its development. We need accurate records to determine the success of the experiment, and the accuracy with which the laboratory worker records the steps in an experiment might well be emulated by the public health nurse. Whether the nurse is working alone for a private agency or on the staff of a city department of health, the information contained in her records should be in such form as to be comparable with data available from records in other parts of the province or country. No longer is it sufficient for the public health nurse to carry information "in her

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†*Editorial, Public Health Nursing, February, 1936.*

head" about her patients. This leaves doubt in our minds of its accuracy and in any circumstances is of no value except to the one nurse. Even though working alone there is always the possibility that such a nurse may be removed from her work temporarily by illness or permanently through her resignation. When this happens there is no basis for continuity of the work as it affects either the patient or the community. It can be considered only as the isolated piece of work of an individual which will play no part in the larger plan of public health nursing.

The public health nurse, if she is to be fully effective, cannot be a lone worker. The families she serves have many needs which are closely related to health conditions. Poverty and health problems go hand in hand. Even with the most skilful stretching, family budgets will not always provide for the nutritional requirements, recreation and other essentials, which are necessary in a successful plan for the family's health. The other resources of the community must be utilized. There must be co-operation with other agencies and this implies information in an available form.

The Value of Records to the Department or Agency

Let us consider public health nursing records as they concern the particular agency. Both official and private public health organizations must justify their expenditures. One fundamental question must be answered through the record system—is the organization performing the function for which it exists? Through a good system of records the volume of work can be ascertained, the number and the type or diagnoses of cases, the age groups and nationalities served, in what proportion men, women and children are cared for, the number and type of visits made, how the nurse's time is spent, what proportion of time is given to the various services, whether one service is being developed to the disadvantage of the others. The average time spent on a visit and the average number of visits made per nurse per day can be estimated. If this is shown to be below a reasonable average the reason can usually be found. Too much time may be spent in travel between cases. Even in cities in certain sections cases are sometimes quite scattered. The Metropolitan Life Insurance Company has estimated through a study of records that an average of 200 additional visits each year can be made by a nurse when transportation is by motor.

Frequent checking and study of records can result in considerable saving of expenditure for the organization and this, without undue time being spent on records. With well planned, printed forms for day sheets and case records, valuable information can be available and the time spent in record-keeping need not exceed a reasonable allotment. Compilation of statistics from records can be done by clerical workers under guidance, and it is more economical than using the time of the nurse for the purpose.

The cost per visit as well as the cost of special services can be estimated with very little difficulty, provided records of visits and time are kept. These are considered in their relation to the treasurer's statement. This information

should be available whether the organization sells its services or gives them without charge.

Certain records are used as an aid to the administrator and bear the same relation to the service as a whole as service records do to the particular case. They include the daily report forms, monthly tabulations of activities and personnel reports. They supply the data which permit analysis of the service and form the basis on which plans can be made for the conduct of the work. From these it is possible to write annual reports which will interpret the activities of the organization in such a way as to bring them before not only those primarily interested in public health but as well to the general public who through taxes or voluntary contributions support the work. While statistics stated only in figures may be dry and uninteresting, when given in relation to the story that lies behind them they will gain the sympathetic attention of the listener or reader.

Essentials in Record-keeping

Adequate office space, equipment and clerical assistance bear an important relation to well kept and accessible records. Each staff nurse should have her own desk space which should be so placed as to make it possible for her to isolate herself from her fellow staff-nurses while she is planning her day and doing the record work which must be done in the office. This does not mean physical isolation as much as mental isolation but when nurses work side by side around a large table with very little space between, it is difficult for them to concentrate. There is a temptation to confer with nearby neighbours on cases and while this may be quite professional and legitimate much time can be consumed with very little productive result. Conferences on cases are valuable but they should be planned for a special time and place if time is to be put to its best use. Therefore, with perhaps a little more space and better desk accommodation, organization time paid for at the rate of the nurse's salary can be saved.

The Nurse-supervisor and Records

One of the fundamental principles of public health nursing, as stated in the Public Health Nursing Manual of the National Organization for Public Health Nursing, is that provision should be made for systematic and educative supervision of the nursing staff and it is recognized that the analysis and checking of the nurses' records is one of the most effective methods by which this can be accomplished. By a study of case records the supervisor can give the nurse valuable advice in individual cases and stress principles which affect the whole structure of her work. She will be able also to evaluate the work done in her area and to contribute to the effectiveness of the whole work.

Service Records and Their Practical Value

Service records are those which concern care and instruction given to families or individuals either through home visit or attendance at clinics, or other group activities, and include family folders, individual case histories and

reports on service rendered in special cases. I should like to quote again from "Recording of Local Health Work": "The service record when properly planned and used by the staff worker is something that is alive and helpful in the conduct of the case, rather than an extra burden that the staff must carry. It is actually a tool to aid the worker in rendering the service and the administrator in evaluating the service rendered. In the introduction of a new record form to a field staff or in the case of new staff members, it is desirable that workers be given opportunity to carry cases under supervision and to have the records reviewed by someone who is thoroughly familiar with the condition of the case, the nature of the service rendered, the purpose of the record form and the use which will be made of the record material".

A study of the case record and family folder before making a visit will well repay the nurse for the few minutes it takes. She will review the information already obtained and ascertain what is lacking that she must get. In this way she will avoid asking unnecessary questions which might be a cause of irritation to the patient or family. She will learn of any unsatisfactory conditions that should be checked. If there is a telephone number recorded she can call to see if the patient will be at home and avoid going out of her way and taking travel time to make a fruitless visit. In reading the record she may have a conscience-stricken moment when she recalls certain information about the case which she should have recorded but has not and which would not be known were another nurse to make the visit. She may decide it is advisable to telephone the doctor for orders. Before she enters the home she will have a definite plan and purpose for her visit.

It is generally conceded that the recording of visits should be done in the home at the time of the visit. This effects both accuracy and a saving of time and it will give the nurse an opportunity to scan the items on the record for any points in health teaching she may have overlooked.

At the conclusion of a visit the purpose and date of the next visit should be decided and a brief notation made on the record. This will be especially valuable if a different nurse makes the visit.

No matter how well planned records may be, they are of value only when they are properly kept and used.

A study of records is helpful when it is necessary because of shortage of staff to select which cases need visiting most urgently. On a morbidity service need of a visit to a helpless chronic patient might hinge on whether or not there were someone in the home capable of giving the care. If child-welfare cases were being considered, it would not be difficult to decide if one record showed a healthy breast-fed baby with an intelligent co-operative mother who consults her doctor regularly and another a delicate baby bottle-fed at irregular intervals with a mixture not based on medical advice.

When a public health nurse visits a home to care for a mother and baby her interest is not confined to these two. She considers the family as the unit in her work and her entrance to the home as a case finding opportunity for whatever

problems may exist in the family. It is, therefore, not enough for her to record her visit to the mother and baby. She should enter any information she has obtained regarding the family. It will be of use to her or any other nurse who may make future visits. The family folder which is used for this purpose when properly written not only reveals the names of the various members of the family and the state of their health but as well the family circumstances and way of living. A knowledge of these things will influence the nurse in her approach to the family problems and pave the way to a good relationship.

Where the record shows the family income is not sufficient to provide for necessary medical care, clinic treatment would be advised whereas in more affluent circumstances a visit to the family doctor would be urged.

Repeated visits would not be made for the correction of dental defects to families not in a position to pay the dentist, unless there were facilities in the community for having the work done free. Rather the nurse would on the first visits ascertain the willingness of the parents to have the corrections made if the means were provided, and then from her records make a list of the children needing free treatment and on the basis of this to try to interest the authorities or a private group in providing the service.

The records of an organization should be adapted to its particular needs and should serve not only as a means of interpretation of the service but also of comparison with similar work done elsewhere. This calls for a standardization of terms and their definitions, a uniformity in the content of records and in the statistical accounting of cases and visits.

Two references that will be practical help to those who wish to have a better understanding of the keeping of records and the compiling of statistics from reports are the "Handbook on Records and Statistics in the Field of Public Health Nursing", prepared by a Joint Committee of the National Organization for Public Health Nursing and the Advisory Committee on Social Statistics in Child Welfare and Related Fields of the United States Children's Bureau and published in 1932; and a more recent publication, "Recording of Local Health Work" by Dr. D. F. Walker and Caroline Randolph, previously referred to in this paper.

If local public health nursing records conformed to those recommended by provincial departments of health and were approved by them, it would insure that uniformity at least within the provinces, which would make them of definite value in measuring the efficiency of the present methods employed in carrying on public health nursing services.

The Circumstances of Accidental Death in Canada in 1936*

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DURING the year 1935 a new death certificate was introduced for use throughout Canada. The most important changes were in the medical certificate, and certain specific questions regarding violent deaths, designed to supply more complete information, were included. As 1936 was the first year for which the new certificate was in use, a study has been made of the preliminary data as relating to accidental deaths.

Though it is not the purpose of this study to make a comparison between 1936 and previous years in regard to fatal accidents, it may be stated that the preliminary figures indicate the largest number of accidental deaths and the highest rate since 1931. In 1936, 6,351 accidental deaths were recorded, a rate of 57.7 per 100,000 population, as compared with 5,795 deaths in the preceding year, a rate of 53.1. Motor vehicle accidents were responsible for 1,313 deaths, a number slightly in excess of that recorded for 1935, namely, 1,224.

In commenting on the data for 1936, it should be remembered that an unusual heat wave occurred early in July both in Ontario and Manitoba and lasted for about ten days. During the heat wave, 814 deaths were recorded as due to heat, as compared with only 70 in 1935. The number of deaths rapidly increased during the heat wave, rising from 9 deaths on July 8th to 162 deaths on July 12th. The effect of heat was particularly marked in persons 70 years of age and over. Of 814 deaths attributed to heat, 488 occurred in this age-group. Of these 488 deaths among elderly persons, 275 were females and 213 males. As would be expected, the heat caused many deaths among persons who were suffering from cardio-renal conditions. Mention was made of such conditions as a contributory factor in 355 deaths assigned to excessive heat.

In this study, accidents and their related circumstances have been grouped according to age at occurrence, and differences have been noted between the sexes.

Factor of Sex

Of the 6,351 accidental deaths in 1936, 4,406 were of males and 1,945 of females. Of the fatal industrial accidents, only 6 occurred among women and 974 among men. In contrast, in home accidents stated at such, 1,419 female deaths were recorded, as compared with 1,341 male deaths. Accidents occurring outside the home and not associated with industry accounted for 2,084 male

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deaths and 506 female deaths. In addition, there were 7 male deaths and 14 female deaths in which the place of occurrence was not stated.

CHARACTERISTIC ACCIDENTS OF VARIOUS AGE-GROUPS

Under 1 Year of Age

The fatal accidents occurred almost always in the home, only 6 of the total of 158 occurring outside the home. Of this number, 89 were males and 69 females. The outstanding causes were suffocation and burns. Suffocation accounted for 77 deaths, of which 20 were smothered in bed with their parents and 28 were suffocated in their bedclothes and pillows. Burns of various types caused 21 deaths.

1 to 4 Years

In the age-group 1 to 4 years 443 deaths were reported. Two hundred and ninety-three of these occurred in the home and 149 outside the home. Of the former, 168 were males and 125 females, and of the latter 106 males and 43 females. The largest number of deaths was occasioned by burns, namely 144. Thirty-four were occasioned by the destruction of their homes by fire and 110 were from accidents in the home where burns were incurred by scaldings, falling into containers of hot water, and the drinking of lye. Drowning was the second cause of death in this age-group. Fifty-six deaths occurred outside the home and were occasioned by falling into rivers, ponds, or ditches, or in attempting to swim. On the home premises 28 deaths resulted from drowning in wells, troughs, cesspools, etc. As would be expected, traffic accidents accounted for a large number of deaths, although occupying only third place in the list. There were 86 deaths, of which 69 were occasioned by being struck by motor vehicles. Thirty-nine accidental deaths were due to poisoning, of which 25 were due to strychnine.

5 to 14 Years

In this age-group 519 deaths were recorded, 369 among males and 150 among females. Traffic accidents accounted for the largest number, approximately 36 per cent. of the total. There were 187 accidents, of which 146 were occasioned by motor vehicles and 41 by other means. Of these, 90 pedestrians were struck by motor vehicles and 16 by other vehicles. Drownings were responsible for 145 deaths. The preponderance of males is shown by the fact that 133 were males and 12 females. Fewer burns were recorded than in the early age-group. The causes included the variety of circumstances in which children suffer burns, such as playing with matches, the igniting of coal oil or gasoline, scaldings, etc. Among the other causes, accidental shootings were responsible for 26 deaths and of these the dangerous 22-rifle was responsible for 11.

15 to 69 Years

In this active period of life accidents are responsible for a large number of deaths. During 1936, 3,557 deaths occurred in this age-group from accidents

and of this number 2,918 were males and 639 females. Considered from the standpoint of the place of occurrence, 816 deaths occurred in the home. Of this number, 485 were males and 331 females. At the place of industry 929 deaths of males and 5 deaths of females occurred. Traffic accidents were responsible for 1,497 deaths. Pedestrians to the number of 222 were struck by motor cars with a fatal outcome, and 714 deaths were recorded from other motor accidents. Drowning was responsible for 569 deaths. The causes of accidents in the home were chiefly acute poisonings, burns, and falls; and of the accidents away from home, traffic accidents and drownings, together with occupational accidents.

70 Years and Over

There were 1,674 deaths in this age-group, of which 756 were males and 918 females. Accidents occurring in the home numbered 1,350, which included 518 males and 832 females, in contrast with accidents outside the home, which totalled 282. Of this number, 197 were males and 85 females. Only 42 industrial accidents were recorded. The data emphasize the importance of study and prevention of home accidents since these accounted for more than four times the number which occurred outside the home. Of the 282 deaths occurring outside the home, 100 were accidents in which the majority were struck by vehicles.

Note on the Occurrence of Fractures

Amongst the accidental deaths at all ages, fractures of the skull were recorded in about 800 cases. Fracture of the femur occurred most frequently in elderly people. In the age-group 70 years and over 486 such fractures were reported as caused by a fall and 55 without mention of a fall.

SUMMARY

In 1936, 6,351 accidental deaths were recorded in Canada according to the preliminary figures, a rate of 57.7 per 100,000. The number of deaths and the rate are the highest since 1931. The influence of the heat wave during the summer of 1936 is reflected in the recording of 814 deaths as due to heat. The study records the occurrence of accidental deaths and their related circumstances in the age-groups under 5 years, 1 to 4 years, 5 to 14 years, 15 to 69 years, and 70 years and over. The factor of sex is considered in each of the age-groups.

DISCUSSION

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The data so ably presented by Miss Baudry are a challenge to those in public health work. While considerable success has been achieved in the reduction of accidents in industry, and while for many years there has been public interest in the toll from traffic accidents, accidents in the home do not seem to have impressed themselves on the public imagination. It is fair to say that home accidents are nobody's business. It is reasonable to ask why they should not be the business of public health.

In 1936 there were 158 accidental deaths of infants. After making every possible allowance for extraneous causes such as the destruction of the home by fire, one was forced to the tragic conclusion that 135 of the deaths were directly traceable to lack of supervision by a responsible adult. More startling still, 30 per cent. of the deaths were due to suffocation in bed with their parents or by pillows and bed-clothing. In the age-group 1 to 4, over 68 per cent. of the deaths were without doubt due to lack of supervision. Between the ages 5 to 14, the picture still showed the lack of parental supervision but one saw also the lack of safety precautions in housekeeping as a contribution to the accidental death of the child.

It seems to me that Miss Baudry's study points to the need of concerted effort on the part of the epidemiologist and those who practise public health teaching, particularly the public health nurse. If we are to arrive at a proper understanding of the educational problems in connection with the prevention of accidents in the home, we will have to pay attention to the psychology underlying the general indifference to home-safety education. I would suggest just one thought to you for your consideration. Falls constitute the chief cause of fatal accidents in the home but unfortunately we associate the comic with a fall. I have no doubt that this mental attitude can be changed. I merely want to point out that there is a problem in educational psychology which must be taken into account if we desire to learn the epidemiology of home accidents. I do not believe that we can scientifically project any preventive work without knowledge of the epidemiological facts.

With reference to the homes, I do not think that there is any person better fitted to undertake this problem than the public health nurse. In any study of fatal home accidents, it will be disclosed that there are two major factors in the deaths of infants and small children, namely, lack of proper supervision and bad housekeeping. Sometimes we are apt to forget that the original meaning of the word "doctor" was "teacher". Fortunately, this unbroken tradition animates public health and expresses itself in a form familiar to the average parent through the work of the visiting nurse. No one is in a better position than the nurse to note the hazards that exist in the home and tactfully give instruction in those matters which would safeguard the lives of little children. I do not think that it is asking too much to suggest that the nurse keep in mind this added feature which, after all, only broadens our present concept of child protection.

Cross-Connections in Water Supplies

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A CROSS-CONNECTION may be defined as "a physical connection by means of which water may flow between a public or private potable supply and a non-potable supply". There are therefore two factors: the existence of a connection between two supplies, one potable and the other non-potable; and the possibility of flow between them.

Gate-Valve Cross-Connection

Let us consider first the situation where there is a dual water supply in a large industrial plant. There is the municipal or potable supply (system no. 1) and the industrial or non-potable supply (system no. 2). The municipal supply is supplied from two springs and flows by gravity into the mains. System no. 2 pumps raw river water into its own distributing pipes for general purposes in the plant such as washing, cooling and processing. Owing to the fact that there is no cross-connection between the two systems, there exists no possibility of the water from system no. 2 contaminating that of system no. 1, and the health of the citizens is therefore not directly endangered, although workmen may, by accident or intent, drink from system no. 2.

But let us suppose that the two systems are connected by the installation of an ordinary gate-valve. Although the gate-valve is generally kept shut off, it may be opened in cases of emergency and permit of a reversible flow into the municipal system, causing a serious contamination.

Check-Valve Cross-Connection

Factories generally use the municipal water supply when providing a fire sprinkler system. As a precautionary measure, there has been sometimes installed a dual supply from a nearby river. A fire pump and one check-valve are installed, so that the pressure of the municipal supply may be maintained at all times on sprinklers and hydrants inside the plant. On the occasion of fire, the fire pump shuts off the check-valve. But if, for some reason, the swing door of the check-valve is not perfectly seated in a closed position, polluted water will flow from the pump into the municipal system, since the industrial pressure may reach from 100 to 150 pounds per square inch, while the average municipal pressure is 50 pounds. Serious hazard to the health of the persons living in the town is created.

Auxiliary Intake

A third type of cross-connection consists in the providing of an emergency intake, usually from a polluted source. Such a situation has arisen when there has been a shortage of water occasioned by a reduced municipal supply. The emergency intake constitutes a cross-connection.

These three types of cross-connection are the most commonly found. They may include more than one valve or check-valve, and even by-passes; and they may be located anywhere inside or outside the buildings or underground.

OUTBREAKS OF TYPHOID FEVER AND DYSENTERY IN QUEBEC TRACED TO CROSS-CONNECTIONS

Village of Laperade

This village, situated on the north shore of the St. Lawrence River, is supplied with water from three springs. The northern section of the village is supplied from one spring and the flow is by gravity. A collecting reservoir and a pumping station supply the southern district. For fire-protection purposes the municipality installed a separate system with an intake in the Ste. Anne River, equipped with two pumps. Both systems were connected at the pumping station by means of a pipe line with a gate-valve. With pumps operating both systems at the same time, the pressure of water for domestic use was 20 pounds and that for fire-protection purposes 120 pounds. To prime the fire pump it was necessary to open the gate-valve on the connecting pipe. As it was not possible to shut off the valve immediately after priming the fire pumps, contaminated river water was pumped into the domestic system. In November 1931 an outbreak of typhoid fever occurred, consisting of eight cases. One death was reported.

Ste. Martine Convent

During March, 1922, 11 cases of typhoid fever developed among the personnel and students at this large convent. The institution was supplied with water from a well 22 feet deep. This supply was used for drinking and culinary purposes. As the water was too hard for use in the laundry, a pipe line had been installed to the nearby river for use in the laundry, boilers and toilets. Several sinks in the dormitory were also supplied with contaminated river water. The two systems were not separated, as the suction pipes of both systems were connected. There was also an additional cross-connection in the system.

Several weeks before the outbreak of typhoid fever the pump on the well did not operate properly. The residents of the convent were forced to drink river water. Following the investigation, the convent was permitted to use the river supply for laundry and heating purposes only and the cross-connections were removed.

Investigations in Montreal

In May, 1932, the Department of Health of Montreal and the Provincial Bureau of Health conducted jointly a study of the incidence of typhoid fever in Montreal. It was shown that the number of cases of typhoid fever from the Hochelaga district was 16 in 1930, 41 in 1931, and 32 for the period of January-April, 1932. During the latter period, 53 cases occurred in the city as a whole. Epidemiological study of the 53 cases showed that 5 cases were under 10 years of age, 24 between 10 and 20 years, 13 cases between 20 and 30 years. There was no evidence to suggest that the milk or other food supply was the source of infection.

The large proportion of cases occurring in the Hochelaga district suggested an investigation of the water piping and connections of the industries of that district for the presence of cross-connections. The following are the findings in this investigation.

Plant No. 1. A cross-connection, including two gate-valves and two check-valves, existed in a concrete pit between the municipal supply and the auxiliary supply. Both gate-valves and one check-valve were found to be leaking; the other check-valve could not be tested due to leaks in the other three valves.

Plant No. 2. Six cross-connections were found: in the boiler room, underground in the yard, in the repair box department, and in the colour dye department; in the pumping station the fire and service pumps were connected with the municipal supply for priming, and in the sprinkling system a cross-connection existed.

Plant No. 3. On the day of the inspection one cross-connection was removed by the firm but in the pumping station it was found that the sink was supplied with river water for washing purposes. Here it was presumed that the operators of the pumping plant would carry drinking water from the main building for their use.

Plant No. 4. A case of typhoid fever had developed in 1931 and as the firm had been required to pay damages following the death of the patient, all cross-connections had been removed.

Plant No. 5. In this large plant the company had been conscious of the danger to the employees from drinking river water which was used in the plant for various purposes. The company had posted notices that city water was available at all taps. Investigation showed that in the forge department the right-hand tap was supplied with river water and the left-hand tap with city water. One 2-inch service line supplied water for drinking purposes but it was provided with a cross-connection also. A number of taps for drinking purposes had been installed on the sprinkling system, which system was generally supplied with city water but when the fire pumps operated, river water, due to cross-connections, was likely to enter the system. A series of cross-connections was found on the six service pipes, several being provided with two check-valves and the remainder with one only. The service pump supplying water from the river was primed with city water by means of a pipe connected directly to the city line, without even a check-valve.

Plant No. 6. This was an example of a cross-connection consisting of two gate-valves separated by a drip pipe which was kept open. Although this arrangement was better than those frequently found, the company admitted that the drip line was occasionally opened to prime the raw water pump.

Plant No. 7. At the request of the Department of Health, all cross-connections had been removed. As a result of this investigation, it was recommended that city water be used for washing facilities. Bubbling fountains had been located in different places in the plant following the first study.

From the joint survey made in the Hochelaga district it was evident that the cross-connections found were an important factor in the high incidence of typhoid fever in that district.

Lac Bouchette

The village of Lac Bouchette is located on the shore of Lac Ouiatchouan and Lac Bouchette. Three-fourths of the families of the village are supplied with water from the municipal water-works system, which has its intake in the discharge of Benjamin Lake. A hydro-electric plant, including a dam, is located on another river nearby. Investigation showed that during March a patient had died of typhoid fever and that during the patient's illness the discharges were thrown on the surface of the ground above the dam. The section of the municipal pipe line supplying water to the operator's house at the hydro-electric dam was frozen during the winter and had been connected by a cross-connection, using a gate-valve, to the hydro-electric pipe line in order to supply water to that house. At the end of June the greatest part of the municipal supply was shut off to permit of repairs and the gate-valve was opened. Fifty cases of typhoid fever occurred during the next few weeks, five of the cases being among those living near the dam and the remaining forty-five among those receiving the municipal supply.

Richmond

The municipal supply is obtained from Doughty Brook. Two-thirds of the sewage of the municipality is discharged into the St. Francis River. The railroad company obtains its water supply from the St. Francis River below the sewage outfall. This plant consists of a low-lift pumping station with an elevated steel tank from which water is supplied at a maximum pressure of 25 pounds per square inch. Three lift pumps are employed to raise the pressure to 200 pounds. Since the pressure of the municipal system was considered too low for fire-protection purposes, a cross-connection was installed between the railroad system and the municipal supply. This cross-connection was the property of the town, though partially located in the company's plant. It included two gate-valves and one hydrant installed between these. In December, 1932, the inside gate-valve had been opened occasionally and repaired owing to its leaking condition. During the repair the outside gate-valve, which was supposed to be kept shut, remained open to furnish water to the municipal hydrant. An outbreak of eight cases of typhoid fever occurred in January.

La Salle

An industrial plant provided three service lines of municipal water. Cross-connections were found to have been installed on each of these lines. At one of the lines a cross-connection existed in the laundry room, two cross-connections in the switch department, and four in the storage department. Occasionally the valves on these systems were opened and this explains the occurrence of an occasional case of typhoid fever, as contaminated river water would be supplied at certain taps for a short period.

St. Ours

The use of an auxiliary intake and the pumping of contaminated water of the Richelieu River into the distributing system of the village caused an outbreak of 300 cases of dysentery and 2 cases of typhoid fever in a population of only

800. The auxiliary intake had been installed because the municipal supply, obtained from springs, had been insufficient during December, 1933. In January river water was pumped into the system without notice. Immediate chlorination of the water was required by the Department.

RECOMMENDATIONS AND LEGISLATION

Following the investigation of each of these outbreaks in Montreal and in different parts of the Province, recommendations were made promptly for the prevention of future occurrences in these communities, and legislation was studied. The following recommendations were suggested, namely:

(1) That existing cross-connections between potable and non-potable supplies be removed, together with such installations as swinging joints, and equipment such as flexible rubber hose and cast-iron flange pipes used in making cross-connections.

(2) That drinking taps be removed from the pipe lines supplying sprinkling systems where there is any possibility of contaminated water entering the system.

(3) That potable water be always supplied in the installation of showers and toilets.

(4) That where reservoirs are required for priming pressure and vacuum pumps, for coolers, boilers, etc., permission be given for their use provided that the inlet pipe of the potable water be located at a higher level than the overflow line.

(5) The necessity of chlorinating auxiliary water supplies used for emergencies or in fire protection or, preferably, the replacing of the supply by potable water.

Legislation

Following the study referred to, Mr. T. J. Lafrenière, Chief Sanitary Engineer, submitted to the Director of the Bureau of Health in 1933 a detailed report concerning the dangers of cross-connections, enumerating the outbreaks which had occurred in the Province and discussing legislation, including the municipal by-law of the city of Montreal relating to cross-connections. As a result, the following amendment to the Quebec Public Health Act was passed in April, 1933.

"No connection may be made between the public water distributing conduits and the distributing conduits of a private system until the plans and specifications have been submitted to the Director of the Provincial Bureau of Health and his approval has been obtained.

"Plans and specifications of existing connections must be submitted to the Director of the Provincial Bureau of Health before the first of January, 1934. Such connections must be done away with or altered whenever, in the Director's opinion, they constitute a menace to public health."

With the authority of this amendment, the problem of cross-connections is being effectively met and the menace greatly reduced.

Agglutination of Salmonella and Dysentery Suspensions by Sera of Normal Persons

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THERE is a measure of agreement among bacteriologists regarding the "limits of normal agglutination" which is to be taken as a base line in estimating the diagnostic significance of the titres of certain agglutinins encountered in sera. It is recognized, however, that because of different experience of infection and of the use of specific methods of immunization, populations otherwise quite similar may differ in respect of the proportion of individual sera which agglutinate a given organism to a given titre, whether these be so-called "normal" sera or simply sera from the general population.

In an effort to determine the distribution of agglutinins for some of the organisms more frequently encountered in enteric infection in a population approximately representative of that of Eastern Canada, the Laboratories of the Ministry of Health of Quebec have undertaken a comprehensive study of the incidence of various agglutinins in the sera of persons in the Province of Quebec, with special reference to agglutinins for the salmonella and dysentery groups. The material presented relates to an initial series of agglutination tests of sera from persons in Montreal.

Materials and Methods

The majority of the sera (table I) were from specimens submitted for the Wassermann test and, with the exception of an insignificant number examined early in the course of the work, these were Wassermann negative. Of the first group of 100 male sera, 45 were collected from prospective settlers of provincial colonization areas and since these men were closely questioned, their sera may be considered "normal". Information regarding past infection or immunization was not obtained from the persons represented by the other sera included in this study.

For comparison with these sera, 34 male and 24 female sera were collected from hospital patients, the great majority of whom were suffering from febrile diseases other than enteric fevers. Most of these patients, but by no means all, were cases of tuberculosis. The chief purpose of including these sera was to compare their titres of dysentery agglutinins with those of the general population.

The methods employed in performing the agglutination tests were essentially those specified by the Standards Laboratory (Oxford) of the

TABLE I

GROUPS OF SERA AND SUSPENSIONS EMPLOYED

Sera	*Suspensions*
Group I.....100 male and 100 female control sera (including 45 "normal" male sera)	*S. typhi* "O" (serum dilutions 1 in 125, 250 and 400) *S. typhi* "H" *S. paratyphi B* specific *B. dys.* (Flexner) V, W, X, Y, Z *B. dys.* (Sonne) *B. dys.* (Shiga)
(17 male and 80 female sera of this group, in dilutions of 1 in 50, 125 and 250, were tested also with a *Br. abortus* suspension.)	
Group II.....50 male and 50 female control sera	*S. typhi* "O" (serum dilutions 1 in 25, 40 and 80)
(25 male and 25 female sera of this group, in dilutions of 1 in 25, 40 and 80, were tested also with a *Br. abortus* suspension.)	
Group III.....50 male and 50 female control sera	*S. typhi-murium* (aertrycke) sp. *S. typhi-murium* (aertrycke) "O" *S. paratyphi A* sp. *S. paratyphi C* sp.
Group IV.....34 male and 24 female sera from cases of febrile (non-enteric) disease.	*S. typhi* "O" *S. typhi* "H" *S. paratyphi B* sp. *B. dys.* (*Flexner*) V, W, X, Y, Z *B. dys.* (*Shiga*) *B. dys.* (*Sonne*) *Br. abortus*

Medical Research Council of Great Britain. The "standard suspensions" issued by this laboratory, the pipettes (Dreyer and automatic) and tubes (Dreyer), as recommended, were used and the results of the tests were read after the tubes had been held, during specified periods ranging from 2 to about 20 hours, in a water-bath at 50°–55°C. Not more than 3 dilutions of the sera were usually employed, for only the upper range of titres was sought.

RESULTS

The results, expressed as titres of at least "standard agglutination" (marked agglutination with no sedimentation), are shown in table II. The table is self-explanatory and only a brief discussion of certain of its features is necessary.

TABLE II

PERCENTAGE FREQUENCIES OF AGGLUTINATION TITRES OF SERA OF PERSONS IN THE CITY OF MONTREAL

		Percentage Positive			
		Control	*Group I*	*Group IV*	
Suspension	*Titre*	100 Male	100 Female	34 Male	24 Female
S. typhi "H"	1:25	2	1	6	0
	1:40	3	0	9	13
	1:80	15	3	0	13
S. typhi "O"	1:125	0	0	0	0
	1:250	0	0	0	0
	1:400	0	0	3	0

TABLE II—*Continued*

Suspension	Titre	Percentage Positive Control Group I 100 Male	Control Group I 100 Female	Group IV 34 Male	Group IV 24 Female
S. paratyphi B sp.	1:50	4	0	6	0
	1:125	1	0	3	0
	1:250	0	0	0	0
B. dys. Flexner V	1:40	6	10	18	8
	1:80	5	1	3	0
	1:125	2	2	3	0
B. dys. Flexner W	1:25	5	2	3	4
	1:40	6	3	6	0
	1:80	4	1	3	0
B. dys. Flexner X	1:40	15	23	41	13
	1:80	20	19	26	21
	1:125	19	14	12	21
B. dys. Flexner Y	1:40	18	17	15	21
	1:80	6	9	9	13
	1:125	9	8	9	4
B. dys. Flexner Z	1:40	8	9	3	13
	1:80	2	2	3	4
	1:125	0	1	0	0
B. dys. Flexner (above 5 series combined)	1:40	14	20	38	17
	1:80	18	19	26	21
	1:125	22	17	15	21
B. dys. Sonne	1:25	0	0	0	0
	1:40	0	0	0	0
	1:80	0	0	0	0
B. dys. Shiga	1:25	3	2	0	0
	1:40	2	0	0	0
	1:80	0	0	0	0
*Br. abortus**	1:50	0	0	0	0
	1:125	0	0	0	0
	1:250	0	0	3	0

Suspension	Titre	Percentage Positive Control Group II 50 male	Control Group II 50 female
S. typhi "O"	1:25	0	2
	1:40	4	0
	1:80	2	0
Br. abortus†	1:25	0	0
	1:40	0	0
	1:80	0	0

		Control Group III 50 male	Control Group III 50 female
S. aertrycke "O"	1:25	2	2
	1:50	0	8
	1:125	4	0
S. aertrycke sp.	1:25	8	22
	1:50	8	20
	1:125	6	4
S. paratyphi A sp.	1:25	0	0
	1:50	4	2
	1:125	2	0
S. paratyphi C sp.	1:12.5	0	0
	1:25	0	0

*Only 17 male and 80 female sera of control group I tested.
†Only 25 male and 25 female sera of control group II tested.

S. typhi "H"

It will be observed that only 3 per cent. of female sera but 15 per cent. of male sera agglutinated this suspension at 1:80 or higher. More general previous vaccination of men and, perhaps, also past infection, are no doubt responsible for this difference. However, in the case of the "other-than-enteric" fever sera, the male sera titre frequencies are much lower and the female higher than those of the controls. The cause of this discrepancy is probably simply an unfortunate distribution of the limited number of samples examined.

S. typhi "O"

Only 3 of 50 male sera and 1 of 50 female sera (Group II) showed agglutinins at a level of about 1:25 or higher while none of the 200 control sera of Group I gave agglutination when tested in dilutions of 1:125 or over. One of the febrile ("other-than-enteric") sera, tested 1:400, gave agglutination. The greater diagnostic significance of a moderate "O" titre, as compared with that of a similar "H" titre, is well demonstrated by these figures.

S. paratyphi A sp.

One of 50 female sera and 3 of 50 male sera agglutinated at 1:50 or higher. Very probably previous vaccination accounts for the rather high titres, for no low titres were encountered.

S. paratyphi B sp.

Five of 100 male, but none of 100 female sera gave standard agglutination in a dilution of 1:50.

S. aertrycke "O"

It is to be remembered that the somatic antigens of this suspension are identical with those of an "O" suspension of *S. paratyphi B*, as well as with those of some other salmonella suspensions. Yet only 2 of 50 male and 4 of 50 female sera agglutinated at 1:50 or higher.

S. aertrycke sp.

This suspension was agglutinated by a large proportion of the sera examined. The female sera agglutinated at moderate dilutions with much greater frequencies than did the male sera, a curious fact, for most of the other suspensions studied were agglutinated more readily by the male sera. If this observed difference in titre frequencies, which even in this limited series of tests is, from the standpoint of the theory of random sampling, of some significance, can be confirmed, one may well be tempted to speculate regarding its explanation.

B. dysenteriae Flexner

Among the features of these results the following may be noted:

1. The comparatively wide distribution of the "X" and, to a lesser extent, of the "Y" agglutinins.

2. The similarity between the incidence of Flexner agglutinins in the male sera and that in the female sera, except perhaps as regards the "W" agglutinins.

3. The lower frequencies of high titres of "W" and "Z" agglutinins.

4. The similarity of the incidence of Flexner agglutinins in the "other-than-enteric" fever sera to that in the control sera. There is no marked evidence here of agglutinin stimulation by non-enteric fevers of the type represented by this group of sera.

It is interesting to note the difference in frequency with which certain titres of agglutinins for the Flexner group were encountered among the Montreal sera and among sera from the general population of British Columbia, as reported by Gibbons (1) and reproduced in table III.

TABLE III

AGGLUTININS FOR B. DYS. FLEXNER IN SERA FROM MONTREAL AND BRITISH COLUMBIA EXPRESSED AS PERCENTAGES

Sera from	*Number of sera*	*Dilution Titres* 1:20	1:40	1:80	1:125	1:160
British Columbia	480	17.9%	8.5%	9.0%	....	2.9%
Montreal (from table II)	200	.....	17.0%	18.5%	19.5%	....

It is evident, from this comparison, that Flexner dysentery infection is much more prevalent in Montreal than in British Columbia. The relatively very low rates of infant mortality from diarrhoea and enteritis reported from British Columbia, as compared with those reported from other sections of Canada, support this conclusion, for Flexner dysentery infection is a very frequent cause of infant diarrhoea and enteritis.

B. dysenteriae (*Shiga*)

Only 5 of 100 male sera and 2 of 100 female sera agglutinated at 1:25 or higher. None of the "other-than-enteric" fever sera, in dilutions of 1:25, 1:40 and 1:80, agglutinated this suspension.

Other Suspensions

Of the first group of sera, 17 male and 80 female sera were tested in dilutions of 1:50, 1:125 and 1:250 with a suspension of *Br. abortus* but no trace of agglutination was observed.

Of the second group of sera, 25 male and 25 female sera, in dilutions of 1:25, 1:40 and 1:80, failed to agglutinate a second *Br. abortus* suspension.

The group of "other-than-enteric" fever sera likewise failed to agglutinate the first *Br. abortus* suspension when tested in dilutions of 1:50, 1:125 and 1:250, except in one instance.

A suspension of *S. paratyphi C* sp. was not agglutinated by any of the third group of 100 sera in dilutions of 1:12.5 and 1:25. It may be noted, parenthetically, that our laboratory, during the past few years, has isolated organisms identified as *S. paratyphi C* from specimens from only two subjects, both residents of a summer hotel.

A suspension of *B. dysenteriae* (*Sonne*) was not agglutinated by any of the first group of 200 sera in dilutions of 1:25, 1:40 and 1:80. Gibbons (1) reported that very few of 480 sera from the general population of British Columbia agglutinated a suspension of this organism in a dilution of 1:20.

SIMULTANEOUS AGGLUTINATION

The more interesting indications relative to simultaneous agglutination, observed in this series of tests, may be generalized as follows:

1. Agglutinins for *S. aertrycke* "O" were practically always accompanied by agglutinins for the *S. aertrycke* "*H*" sp. suspension, but many sera which agglutinated the latter failed to agglutinate the "O" suspension.

2. None of the four instances of para A agglutination was accompanied by agglutination of the aertrycke "O", the aertrycke specific or the para C specific suspensions.

3. Sera which agglutinated Flexner V or Flexner Z usually reacted with the X and often with the Y suspensions. A positive result with the Y was usually accompanied by a positive result with the X suspension.

4. The sera which agglutinated *B. dysenteriae* (*Shiga*) nearly always reacted with several of the Flexner suspensions, especially the X and the Y, to a fairly high titre.

SUMMARY

Groups of 100 to 200 control sera from persons in Montreal and a group of 58 sera from hospital patients, the majority of whom were ill with non-enteric febrile disease, were examined in respect of their ability to agglutinate various salmonella, dysentery and brucella suspensions.

The more important features of the results obtained include the following: the usual discrepancy between the *S. typhi* "H" titres of male and those of female sera; a curious discrepancy between the *S. aertrycke* specific titres of these two groups of sera; the comparatively wide distribution of *B. dysenteriae Flexner* X and Y agglutinins; the similarity between the Flexner dysenteriae titres of the male and those of the female sera; the similar incidence of Flexner dysenteriae agglutinins in the control sera and in the sera of patients suffering from non-enteric febrile diseases; and the infrequent occurrence of high or moderately high titres of agglutinins for *Br. abortus*, *S. paratyphi C* sp. and *B. dysenteriae Sonne* in the sera examined.

Moderately high titres of agglutinins for *B. dysenteriae Flexner* were encountered in the Montreal sera with a frequency much greater than that reported to have been found in sera from the general population of British Columbia.

REFERENCE

(1) Gibbons, R. J.: Canad. Pub. Health J., 1936, *27*:606.

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THE HAZARD OF DIPHTHERIA

IN spite of the striking declines in diphtheria morbidity and mortality which have occurred in many of the cities and provinces in Canada following the extensive use of toxoid, and the reductions in the incidence of carriers of virulent diphtheria bacilli which have been found to have occurred in association with the decline in morbidity where investigations in that regard have been made, diphtheria remains a hazard. The hazard has been narrowed down, however, to the failure to apply efficient means of prevention.

There are no data more convincing than Canadian data that diphtheria is a preventable disease. The very definite response following toxoid, as shown by titration of antitoxin in the blood, the demonstration of the protection afforded by toxoid to those so vaccinated, and the striking, abrupt, and unprecedented declines in diphtheria morbidity and mortality in many cities and other municipalities and even in some of the provinces following the extensive use of toxoid, leave no doubt whatever that diphtheria can be controlled efficiently through the use of toxoid. In the light of our present factual knowledge, argument to the contrary is flighty and fanciful, if not ridiculous.

Diphtheria cases and diphtheria deaths today must be looked on as evidence of human failure to apply an efficient measure of prevention.

But whose failure? Whose responsibility is it to ensure that every child is protected against diphtheria? It is easier to say whose responsibility it is not. Certainly it is not the child's responsibility, not the infant's. Even the parent may be excused under the plea of ignorance. The rest of us, lay or professional, can hardly be excused, can hardly be relieved of some of the responsibility. Scattered responsibilities, however, are seldom accepted or acted upon. They are too easily evaded. Therefore, if responsibility is to be pinned down, it must be placed on the shoulders of the constituted public health authority, local and provincial. No family physician, consulting physician or paediatrician, is exempt from responsibility. Far from it. But regardless of who else accepts or rejects his responsibility or succeeds or fails in his response, constituted public health authority must accept responsibility for the education of the public to the point that they request immunization, for the education of the profession that they support immunization and, at

present, for the initiation and carrying through of immunization until such time as the work can be left satisfactorily to the family and the physician.

The opportunities for such education are many. The press, the school, the church, the women's organizations and the service clubs—all are invaluable means and the services of all are available for the good of the childhood of this country. The success of any immunization program, intermittent or continual, depends largely on the support given by one or more of these agencies. The public health nurse has likewise proved herself invaluable not only in actually assisting in giving toxoid but in preparing the ground for immunization programs in telling parents the simple truths about diphtheria, its hazards and its prevention. The nurse knows the problem. She knows that prior to the use of toxoid diphtheria morbidity and diphtheria mortality persisted as one of the chief public health problems in Canada, that diphtheria was the chief cause of death in the whole age-group of 2 to 14 years in Canada —not only in the remote past but in the very recent years between 1920 and 1930. She knows, too, that the children in the 0-to-4 group supplied nearly one-half of all the diphtheria mortality, that 12 to 15 in every 100 children suffered an attack of the disease and that nearly 1 in 10 of these died. And she knows that unless the protection of the child population is maintained through the continued immunization, diphtheria may and probably will return with its old force

Much has been done in the past ten years. Some fine achievements have been recorded. These achievements can be maintained, however, only by renewed and continued effort. It must be reiterated that every case of and every death from diphtheria are evidence of some failure of some constituted health authority or authorities.

N. E. McK.

THE ANNUAL MEETING OF THE ONTARIO HEALTH OFFICERS ASSOCIATION

THE holding of the twenty-fourth annual meeting of the Ontario Health Officers Association on June 1st, 2nd and 3rd in the Royal York Hotel, Toronto, will be of special interest in view of the presentation of the findings of the Department of Health of Ontario in the control of poliomyelitis. The thoroughness with which the epidemic was combated, and the promptness with which facilities for aftercare were provided by the Department in meeting the largest outbreak of this disease that has occurred in Canada, are known to all the health officers of Ontario. An intensive study of the clinical and epidemiological data is being made and the findings will be presented at this meeting. An exceptionally fine program is being arranged and an attendance of more than five hundred health officers is expected.

The importance of this and other provincial health association meetings cannot be overemphasized. Together with the national meeting of the Canadian Public Health Association, they provide the opportunity for health officers throughout Canada to keep in close touch with recent developments in the public health field.

TWENTY-SEVENTH ANNUAL MEETING CANADIAN PUBLIC HEALTH ASSOCIATION HALIFAX, N.S., JUNE 20, 21 and 22

WELCOME TO HALIFAX!

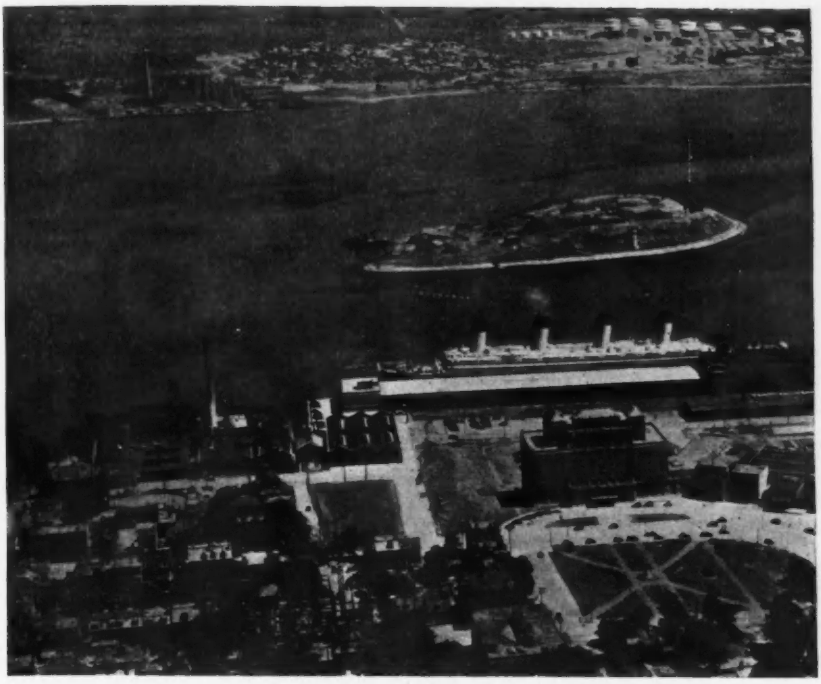
HALIFAX, picturesque old fortress-crowned city, "Warden of the Honour of the North", extends a cordial welcome to the members of the Canadian Public Health Association.

Founded by the Honourable Edward Cornwallis in 1749, the city has had a memorable history. For a century and a half Halifax was the headquarters of the North American squadron of the British Fleet and has a long, noble tradition as a centre of naval and military service. The history of Chebucto Bay, on which Halifax is situated, goes back to Verazano in 1524, who christened the land Arcaria. Champlain visited the site in 1604 and named it *Baie Saine*—Safe Harbour.

The city, with its immense sheltered harbour, lies in a deep inlet of the sea. To the east lies the protected harbour leading to Bedford Basin, where entire navies might be harboured with safety. To the west is the far-famed Northwest Arm, lined on both sides with boating and bathing clubs and summer homes. Across the harbour is Dartmouth. Within the city are 288 acres of public gardens and parks that are considered among the finest on the continent. At the tip of the peninsula is Point Pleasant Park, 200 acres of natural beauty with seashore drives, bridle paths, three forts, and the interesting old Martello Tower, dating from 1798. Overlooking the beautiful Northwest Arm is the Sir Sandford Fleming Park with its birch grove and Memorial Tower.

Every corner of old Halifax is replete with history and romance. Old St. Paul's Church, the first Anglican edifice in Canada and the oldest existing building in the city, was erected in 1750. The old clock tower dates from 1801; the Citadel, a romantic old fortress overlooking town and harbour, from the very founding of the city. The tiny Dutch Church was built in 1755, the Round Church in 1790. The beautiful Public Gardens, considered to be the finest in America, were opened in 1783 as the "Spring Gardens". Province Building, the first Seat of Parliament in the British Dominions, with its fine collection of historic souvenirs, dates from 1818, and Government House from 1801. Historic Dalhousie University was founded in 1818.

The Lord Nelson Hotel, Headquarters for the Meeting.



Aerial View of Halifax Harbour.

Halifax has three eighteen-hole golf courses and excellent boating and salt-water bathing, with numerous beaches within easy reach. Halifax harbour, with its adjacent waters, offers salt-water anglers the finest deep-sea fishing on the Halifax coast. The harbour abounds in a variety of fish which furnish wonderful sport with rod and line. Charming day trips can be taken by motor around the Northwest Arm, past the Dingle and the Memorial Tower to the picturesque fishing villages of Purcell's Cove, Herring Cove, and Portuguese Cove. Peggy's Cove, famous for its surf-drenched headlands and magnificent marine views, is of special interest, with its quaint fishing cottages glistening in the sun, its white lighthouse, and its surf-splashed rocks and blue sea. Along the beautiful St. Margaret's Bay an excellent road leads to Chester; or one may motor around the Bedford Basin through the lovely Dartmouth Lakes region.

Hotel Accommodation. Halifax has excellent hotel accommodation provided by seven first-class hotels. The headquarters for the meeting will be the Lord Nelson Hotel.

There is a fortnightly service from Halifax to New York by the Eastern Steamship Lines and a weekly service by the Furness Line, with regular sailings to Boston from both Halifax and Yarmouth.

PLANS, PROGRAMS, AND PROGRESS

Diphtheria Toxoid Immunization in Ontario

THE present situation in regard to toxoid immunization in municipalities was presented to all health officers in Ontario by Dr. J. T. Phair in a recent letter. From 1931 to 1936 the number of cases of diphtheria in Ontario fell from 2,368 to 290. In 1937, 506 cases were reported in spite of the occurrence of only a few cases in Toronto and other large cities. During 1937, 29 deaths occurred in contrast with 8 in the preceding year. From reports received from every medical officer of health, the Department is able to state the number of children given toxoid in clinics and by the departments of health. The following figures record the number receiving the complete treatment:

1927.....	18,000	1932.....	79,000
1928.....	18,000	1933.....	61,000
1929.....	21,000	1934.....	70,000
1930.....	33,000	1935.....	46,000
1931.....	52,000	1936.....	34,000

The record of the number of cases of diphtheria for the same period is as follows:

1927.....	3,346	1932.....	1,496
1928.....	2,918	1933.....	529
1929.....	3,261	1934.....	371
1930.....	3,198	1935.....	361
1931.....	2,368	1936.....	290

It will be noted that during the years 1935 and 1936 a serious falling-off in the number of children immunized has occurred: from 70,000 in 1934 to 34,000 in 1936. It is estimated that there are approximately 700,000 children under 10 years of age in Ontario and that 65,000 additional children become eligible for toxoid each year. During the last ten years 442,000 children have been given diphtheria toxoid and during the same time 575,000 children have been added to the population. It is therefore safe to assume that not one-third of the children in the Province are protected against diphtheria. The rise in the number of cases reported for the year 1937 reflects the recent drop in the number of children receiving the preventive treatment.

A study of the 894 municipalities in the Province in regard to the administration of diphtheria toxoid shows that there are 406 in which toxoid has not been administered under official auspices. There are also 150 municipalities in which the diphtheria-prevention program has been limited to the giving of toxoid during one year only. In this group of municipalities less than 25 per cent. of the children have been immunized. These municipalities unfortunately are apt to feel a sense of security that is not based on fact. A further group of 60 communities offered this service only at intervals of two, three or four years. There are, however, 275 municipalities that regularly conduct diphtheria toxoid immunizations year after year and in which the incidence of the disease is strikingly low. These municipalities are urged to remember that their present favourable position in regard to diphtheria can be maintained only by continuous immunization of the child population.

Diphtheria toxoid is supplied free of charge by the Department of Health of Ontario, and the Department urges that every board of health should have as its objective the immunization of at least 75 per cent. of its child population.

Typhoid Fever in Megantic, Quebec

Megantic, situated in Frontenac County, suffered a severe outbreak of typhoid fever during November and December. The town has a population of about 4,500. A thorough investigation of the outbreak has been

made by the Ministry of Health of Quebec. Dr. A. R. Foley, Dr.P.H., Provincial Epidemiologist, directed the investigation and the control measures. Approximately 225 cases were reported, with 11 deaths. The epidemic, it is believed, was due to infection of the water supply. Owing to the housing and economic conditions, a considerable number of contact cases occurred. Many of the cases were hospitalized in Sherbrooke.

DIPHTHERIA IN QUEBEC CITY

UNDER the direction of the Municipal Bureau of Health, widespread diphtheria immunization has been conducted in the city of Quebec as a means of controlling the outbreak of diphtheria that occurred during this winter. During the month of January 44 cases were reported, with one death, in contrast with 89 cases and 4 deaths in the month of December. More than 10,000 children have received the prophylactic treatment.

AFTER-CARE OF CASES OF ANTERIOR POLIOMYELITIS IN ONTARIO

THE Department of Health of Ontario reported that during January supervision and treatment were being given, by the Department directly or through agencies receiving financial support from the Department, to 700 of those who had suffered from anterior poliomyelitis during the epidemic of last fall.

CONFERENCE TO CONSIDER THE ESTABLISHMENT OF AN ASSOCIATE COMMITTEE ON MEDICAL RESEARCH

FOR the purpose of giving general consideration to the organization of medical research in Canada, a conference was convened in Ottawa on February 18th under the auspices of the National Research Council. As a result of the deliberations of the conference, which represented all of the universities and research institutes in Canada, the provincial departments of health, and all agencies concerned with medical research, it was decided to recommend the establishment of an Associate Committee on Medical Research, under the National Research Council. Sir Frederick Banting was named chairman of the Associate Committee.

DIPHTHERIA IMMUNIZATION IN SASKATOON

IN a recent report, Dr. Arthur Wilson, Medical Officer of Health, drew attention to the excellent results obtained in Saskatoon in the control of diphtheria through the use of diphtheria toxoid immunization. In 1924 Saskatoon recorded 86 cases of diphtheria and 3 deaths. In earlier years the disease was even more frequent and the deaths more numerous. In 1937 no cases of the disease were reported. Last year 450 persons received the full preventive treatment and also a final Schick test. A clinic provides the immunization free of charge to those who do not go to their family physician. Final Schick tests are conducted as a routine.

DEATH OF LORD ATHOLSTAN

IN the passing last month of Lord Atholstan Montreal lost one of its most notable health crusaders. Among all his philanthropies, his sincere and vigorous efforts in behalf of public health probably stand first. For more than fifty years he had championed the cause of health. In 1885 Lord Atholstan, then Hugh Graham, took a courageous stand in urging vaccination against smallpox. In the face of the devastating epidemic of that year, he led the fight for isolation of cases and for vaccination. Only by seizing the Exhibition Buildings for use as an isolation hospital and by thorough vaccination of the population was the epidemic checked. Years later when Montreal suffered an epidemic of typhoid fever, he was instrumental in safeguarding the city's water supply. Lord Atholstan's philanthropies included generous gifts

to hospitals and $100,000 to the Imperial Cancer Research Fund of London. He was the chief supporter of the Children's Memorial Hospital, Montreal, and was responsible for raising $210,000 as a memorial to Charles Alexander of Montreal, the money being presented to the Montreal General Hospital. He gave adequate leadership in the active anti-tuberculosis movement and was instrumental in organizing the Anti-tuberculosis and General Health League of Montreal, defraying the expenses of $160,000 himself. As a result of the work of the League, the Department of Health of the city was greatly strengthened and a new era of health administration was made possible.

APPOINTMENTS

DR. J. S. PARNEY, of the Department of Pensions and National Health, Ottawa, has been appointed Chief of the Division of Industrial Hygiene in the Department of National Health.

DR. G. L. SPARKS, D.P.H., of Fort William, Ontario, formerly District Medical Health Officer, has been appointed to the staff of the Metropolitan Health Committee of Vancouver.

DR. J. W. HANNA has been appointed Assistant Medical Officer of Health of Regina and will be responsible for the direction of medical services for persons on relief.

THE HON. WILLIAM F. ROBERTS, M.D.

ANNOUNCEMENT of the death on February 10th of the Hon. William F. Roberts, M.D., Minister of Health and Labour for New Brunswick, was received with deep regret by public health officers and members of the Association throughout Canada.

Dr. Roberts was born in Saint John in 1869 and received his early education in that city. Following graduation from Bellevue Hospital Medical College, New York City, he commenced practice in Saint John in 1894. His career was closely associated with the cause of public health in New Brunswick. Believing that the system of public health should be modernized, he sought election to the Provincial Legislature in 1917 and was honoured by being appointed Minister of Health, a unique honour in that he was the first Minister of Health in the British Empire. He visualized an effective public health program, including a provincial system for the registration of vital statistics. The foundations for the department were embodied in the Public Health Act that he presented to the Legislature in 1918. The Province was divided into health districts, a provincial laboratory was established, school medical officers were appointed, and active steps were taken to deal with the problems of tuberculosis and venereal diseases. He served as Minister for the two terms during which his government continued, returning to practice in 1925. In 1935 Dr. Roberts was re-elected and again was appointed Minister of Health. Returning to this office, he brought the same enthusiasm for the advancement of public health that characterized his earlier years of service. During his public career he held many important offices and was honoured by various associations. He was a past president of the Canadian Public Health Association and of the American Academy of Physical Therapy.

The Association extends to Mrs. Roberts and to her son, Murray MacLaren Roberts, sincere sympathy.

BOOKS AND REPORTS

Aftercare and Rehabilitation. *Supplement to the British Journal of Tuberculosis, vol. 31, no. 4, 1937. 142 pages.*

THIS monograph presents the findings of the Committee for Aftercare and Rehabilitation of the International League against Tuberculosis. A survey of the question has been conducted during the past three years by a subcommittee consisting of Sir Pendrill Varrier-Jones, Medical Director of the Papworth Village Settlement, Cambridge; Dr. W. Bronkhorst, Medical Director of the Sanatorium Berg-en-Bosch, Bilthoven; and Dr. E. Bachmann, President of the Swiss League against Tuberculosis. The monograph was edited by Dr. E. Brieger.

In discussing prognosis and aftercare the authors draw attention to the fact that there are no statistical data of a satisfactory kind that show the advantage of the sanatorium-treated group as regards survival or progress, except the far-advanced, and that there is no significant correlation between the progress and length of stay in sanatorium. The facts presented in this chapter are essential to the consideration of the whole subject.

In the second section the physical and vocational aspects of social rehabilitation are presented. Where complete physical rehabilitation is possible, vocational rehabilitation is unnecessary. "To re-establish the earning capacity through physical rehabilitation is the purpose of social medicine but, as a rule, no provision is made for social or economic rehabilitation through the utilization of the substandard labour of the disabled. Those discharged from the sanatoria, whether they be open or closed cases, begin to work as soon as they find an opportunity for doing so. The tuberculous are a real problem in the economic life of the State. . . . The tuberculous working man who survives from year to year must work in order to exist, although it is well known that certain stress and strain may seriously impair the benefits of treatment. The tuberculous members of the population must be regarded as a real factor in the economic system of the nation. Organized rehabilitation and re-employment are important not only for the well-being of the tuberculous worker but also for the economic well-being of the community." For the rehabilitation of the tuberculous, estimation of working and earning capacity is of fundamental importance. This section of the survey discusses fully this subject, including the placement of arrested cases and the provision of sheltered employment.

The third section deals with the "multiple unit" for institutional care and aftercare which provides a sanatorium-hospital as a centre for treatment, an aftercare section intermediary between clinical treatment and re-employment, and a village-settlement with industries for sheltered employment. Various undertakings are presented. Of outstanding interest are Papworth Village Settlement and Preston Hall. In the words of Sir Pendrill Varrier-Jones in the preface to the report: "Progress in this field will depend upon forging a link with industrial medicine. The various aspects of social medicine cannot be separated. The years that lie ahead will see great progress in the development of co-operation with industry and in this way the ultimate solution of many grave problems of aftercare will be found."

The monograph is an outstanding contribution, filled with facts presented in a clear and convincing manner. Within the scope of 150 pages a clear picture is given of the failures and successes of various plans and the considered opinion of the authors as to the underlying principles that should be understood before any plan of rehabilitation is undertaken.

R. D. Defries

Milk Products. *Wm. Clunie Harvey, M.D., D.P.H., M.R.San.I., and Harry Hill, M.R.San.I. H. K. Lewis & Co. Ltd., 136 Gower Street, London, W.C.1 England, 1937. 387 pages. 16s. net.*

THIS recently published volume is a companion handbook to the authors' previous publication, "Milk: Production and Control". The authors are Medical Officer of Health and Sanitary Inspector, respectively, of the Borough of Southgate, England. It presents a comprehensive survey of milk products, including details of manufacture, and places proper emphasis on the sanitary and public health requirements. The book is essentially a public health reference work. A chapter is devoted to each of the following products: ice cream, cream, butter and margarine, cheese, condensed milk, evaporated milk, dried milk, and subsidiary milk products. Reference is made in each of these chapters to such matters as composition, food value, manufacture, bacteria, diseases spread, bacteriological control, chemical examination, defects, and legislation. The text is simplified and made uniform by adherence in each chapter to a standard plan. A number of references is given in the body of the text but it would have been helpful if these had been listed at the end of each chapter, giving the specific journal references.

This volume should prove valuable to those who not only desire information on their own phase of the subject but wish to secure general knowledge on the problems in manufacturing and processing.

A. E. Berry

The Sanitary Inspector's Handbook. *H. H. Clay, F.R.San.I., F.I.S.E. Third edition. H. K. Lewis & Co. Ltd., 136 Gower Street, London, W.C.1, England, 1937. XXII+480 pages, 95 illustrations. 16s. 6d. net.*

THE publication of this handbook in May, 1933, met a very real need in the training of sanitary inspectors. The contribution that the sanitary inspector may make is well recognized in England. This is to be expected since from the very start of organized public health services in England provision was made for the appointing of sanitary inspectors. With subsequent enactments, qualifications for this office were established and as a result the sanitary inspector occupies an important place in local health administration. The fact that *The Sanitary Inspector's Handbook* has required a third edition speaks of the very satisfactory manner in which the need for a text book has been met. In the third revision approximately 100 pages of additional material have been included, required in part by the rveision of most of the references to law throughout the text. The Public Health Act of 1936, the Public Health (London) Act of 1936, the Housing Act of 1936, the Factories Act of 1937, the Public Health Act of 1937, and the Hydrogen-Cyanide Act of 1937 have been included. The whole text has been carefully revised.

The previous editions have been of great value to sanitary inspectors in Canada and the third edition will be heartily welcomed.

R. D. Defries

Disinfection and Sterilization. *Ernest C. McCulloch, M.A., D.V.M., Ph.D. Lea & Febiger, Washington Square, Philadelphia, Pa., 1936. 525 pages, 53 engravings. $5.50.*

THIS book gives a good summary and discussion of the many aspects of disinfection and sterilization. Some idea of the scope of the work may be seen from a list of a few of the topics dealt with: phenol-coefficient, formaldehyde, merthiolate, oligodynamic action of metals, surface tension, high frequency sound waves, roentgen rays, ultra-violet light, catgut sutures, surgical maggots, and bacteriophage.

A large section of the book, a little less than half, is devoted to chemical disinfectants, including acids and alkalis. There are chapters on the destruction of micro-organisms by

radiant energy and by such physical agents as electricity, pressure and filtration. Pasteurization, water purification and sewage treatment are extensively dealt with. The bibliography contains over nine hundred references to original articles.

The book is not without shortcomings. For example, under the heading "the detoxifying power of formaldehyde" there is no reference to the work of either Ramon or Glenny. The context, however, indicates that it is the wording of the heading which is at fault. In the discussion of the germicidal properties of body-fluids no mention is made of bile. Iodine is recommended as an emergency treatment for rendering small amounts of water safe for drinking. Nothing is said of the use of chlorine for this purpose. These, however, are minor omissions which do not detract from the book's value as a work of reference.

P. J. Moloney

Ten Million Americans Have It! *S. William Beeker, M.D., Philadelphia. The J. B. Lippincott Co., 525 Confederation Building, Montreal, 1937. 220 pages. $1.35.*

INTENDED for the layman, this book is an attempt to present the pertinent facts with respect to syphilis in a manner which will be readily understood and give to the reader an appreciation of the extent and seriousness of syphilis as an economic and public health problem. The frequent reference to particular cases which have occurred in the author's private and clinical practice enhance the interest and tend to fix in the mind of the reader certain important points in the epidemiology of the disease. The subject is thoroughly covered in its various aspects and the book may be recommended for social workers, nurses and others in public health work as well as the interested layman.

A. L. McKay

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—FEBRUARY, 1938

Disease	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	..	8	17	167	25	8	2	7	2
Scarlet Fever	2	43	13	527	620	120	191	267	213
Measles	..	156	72	514	924	169	131	240	419
Whooping Cough	..	..	..	461	335	59	5	16	166
German Measles	..	..	..	17	67	2	10	9	31
Mumps	..	98	..	181	644	327	6	27	80
Smallpox	..	..	..	..	..	..	13	3	1
Cerebrospinal Meningitis	..	1	1	6	5	..	..	1	..
Anterior Poliomyelitis	..	..	..	3	1	1	2	2	1
Typhoid Fever	..	3	7	84	6	2	1	1	6
Trachoma	..	..	..	..	..	..	..	..	1

*Data furnished by the Dominion Bureau of Statistics, Ottawa.

CURRENT HEALTH LITERATURE

These abstracts are intended to direct attention to articles that have appeared in other journals during the past month. Any of the journals referred to may be borrowed for three days or longer if desired. Address requests to the secretary of the Editorial Board.

The Incidence and Assessment of Malnutrition

A SERIES of four articles discusses the methods used in the assessment of malnutrition and presents evidence as to the incidence of malnutrition under the following headings: economic, dietetic, medical, sociological, and experimental.

Leslie J. Harris, Med. Officer, 1937. Nov. 27, Dec. 4, 11 and 18.

Lymphocytic Choriomeningitis Antibodies in Human Sera

CONSIDERABLE interest attaches to the findings of these authors who examined the sera of 1,248 persons, chiefly adults, in the U.S.A. for the presence of specific antibodies to the virus of lymphocytic choriomeningitis. Eleven per cent. showed the presence of protective antibodies in mouse-protection tests. These findings raise the question as to the possible wide distribution of this virus. Although the disease was recognized and described only three years ago, cases have been diagnosed in Europe as well as on this continent. These findings constitute an important contribution to the study of this disease.

J. G. Wooley, Chas. Armstrong and R. H. Onstott, U.S. Pub. Health Rep., 1937, *52*: 1105.

Chemical Treatment of Sewage: A Process with a Past—and a Future

STRIKING success of chemical treatment of sewage at many plants marked 1937 as the most successful year of the new chemical era. Effective equipment is essential. The use of ferric chloride, chlorinated copperas, and lime has been continued and further work has been conducted with ferrisul and alum. The use of air as an aid in coagulation has been further investigated. Of considerable interest are laboratory experiments made with bentonite. It appears that a dosage of 100 parts per million accomplishes a degree of treatment nearly equal to that usually obtained with the activated sludge or other biological process. Among plants under construction in which chemical treatment will form a part are those in Denver, Minneapolis and St. Paul, Washington, and Colorado Springs.

Willem Rudolfs, Mun. San., 1938, *9*: 15.

Some Aspects of the Noise Problem

DR. A. H. DAVIS, of the National Physical Laboratory, suggests in this article that although in some cases dislike of noise may be due to psychological causes, the importance of the problem of noise is not thereby diminished. He describes results of investigations of the physiological effects of noise, and of the relation between noise and efficiency. This leads him to discuss the measurement of noise and various methods of reducing it.

A. H. Davis, Occupational Psychology, 1938, *12*: 43.

Smallpox in the United States

ACCORDING to the provisional data, 11,110 smallpox cases were recorded in the United States in 1937, the highest total observed since 1932 (11,194). The greatest prevalence of the disease was observed during the last two years in the North Central, Mountain and Pacific groups of States. However, during the last two months of the year 1937, an increase in smallpox incidence was reported in the East South Central States.

Weekly Epidemiological Record, Health Section of the Secretariat of the League of Nations; R.H. 623, p. 50. Feb. 3, 1938.